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DEVELOPMENTAL AND INDIVIDUAL DIFFERENCES IN PERCEIVED COMPETENCE, LOCUS OF CONTROL, SELF-ESTEEM AND METACOGNITIVE READING AWARENESS

BY

JONAS DARKO-YEBOAH

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA
FALL 1990

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Developmental and individual differences in perceived competence, locus of control, self-esteem and metacognitive reading awareness, submitted by JONAS DARKO-YEBOAH in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Educational Psychology.

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ABSTRACT

The study investigated developmental and individual differences in perceived competence, locus of control, self-esteem, and metacognitive reading awareness among approximately 150 learning disabled, 150 average achieving and 150 achieving gifted students at grade 4 and 7 levels. Based on extensive literature review, conflicting research results in the individual and developmental differences research were noted. Since one of the sources of these conflicts was lack of clearly delineated comparison groups, the study was designed to obtain clearly identifiable and homogeneous learning disabled, average achieving, and achieving gifted groups. Cognitive abilities, academic achievement in reading and teacher-perceived learner characteristics were used as criteria of identification. These clearly delineated comparison groups were evaluated with respect to perceived competence, locus of control, self-esteem, and metacognitive reading awareness, and the scores analyzed using a series of ANOVAs and multiple comparisons, and correlations.

Developmental differences (grade by diagnostic group interaction) existed among diagnostic groups in only social self-esteem. However over-all grade-related differences were more pervasive, occurring in cognitive and social competence, total internal locus and internal failure as well as home, general, and total self-esteem. Diagnostic group differences existed in perceptions of cognitive and general competence, as well as total internal locus, internal success, and self-esteem with respect to social, home, school general and total, and metacognitive reading awareness. The learning disabled manifested relatively lower levels of perception than the average achieving on total internal locus of control, internal success, cognitive competence, and metacognitive reading awareness; the learning disabled obtained lower scores than the gifted on perception of cognitive and general competence, all 5 subscales of self-esteem, total internal locus, internal success, and awareness of reading strategies. The average achieving functioned at a lower level than the gifted on cognitive and general perception of competence, all 5 subscales of self-esteem as well as with respect to metacognitive reading awareness. The learning disabled, average achieving and gifted were not significantly different on social and physical perception of competence, and internal failure. Also, the average achieving and learning disabled did not differ on any of the 5 subscales of self-esteem, and on perception of general competence. The average and gifted did not differ on total internal locus of control, internal success and internal failure, and on social and physical perception of competence. Thus only metacognitive reading awareness and to a lesser extent cognitive perception of competence clearly distinguished among all 3 groups of learners considered together.

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I. INTRODUCTION

A. Purpose

Advances in different perspectives within affective and metacognitive research concerning children's perceptions of behaviour are visible in diverse areas. Among others, these areas include social learning theory (Bandura, 1977; Schunk, 1989), self-perception theories (Bem, 1972; Harter, 1982), social cognition (Lepper & Greene, 1978), locus of control (Crandall, Katkovsky, & Crandall, 1965; Rotter, 1966), intrinsic motivation (Deci, 1975; Harter, 1981), self-esteem (Coopersmith, 1981; Simmons, Rosenberg, & Rosenberg, 1973), and metacognitive reading awareness (Kirby & Moore, 1987; Myers & Paris, 1978; Paris & Jacobs, 1984). Individual and developmental differences have been found to exist among children in the elementary and junior high in many of the areas referred to above, but conflicting research results exist as well. Moreover in many cases the specific aspects of the measures which indicate developmental and individual differences are not clearly specified.

The purpose of the present study was to identify the specific areas of perceived competence (Harter, 1982), locus of control (Crandall, Katkovsky & Crandall, 1965), self-esteem (Coopersmith, 1981), and awareness of reading strategies (Paris & Jacobs, 1984) which clearly distinguish among the learning disabled, average achieving, and gifted; i.e., to determine if developmental and individual differences existed among learners of high, average and low abilities at grade 4 and 7 levels with respect to a number of subtests of affect and in awareness of reading strategies. A brief rationale for the present study follows, highlighting some of the problems referred to above.

B. Rationale

The evidence for developmental differences in the affective and metacognitive characteristics of different learners is not conclusive because the context of research in these areas is such that different researchers obtain different results. In the many studies that have been conducted into possible grade-related changes in affect and metacognition some researchers have found stability of scores across grades, especially after grade 3 (Chapman, 1988; Harter, 1982), whilst others have reported either mixed findings (e.g., Connell, 1980; Milgram & Milgram, 1976) or declining developmental trends (e.g., Berndt, 1987; Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983; Eccles, & Midgley, 1989; Gottfried, 1981; Harter, 1980). The details are presented in chapter 2).

Similar conflicting results have been found in individual difference research concerning children's perceptions of themselves, and the understanding of the strategies required to perform the tasks. For example, in self-concept research that compares the gifted with non-gifted many of the studies indicated the gifted to possess higher self-concept (e.g., Ketcham & Snyder, 1977; Lehman & Erdwins, 1981; Maddux, Scheiber & Bas, 1982) while, other researchers reported no differences (e.g., Loeb & Jay, 1987; Karnes &

Wherry, 1981). Similarly in locus of control, while several studies have found differences between the gifted and non-gifted (e.g., Davis & Connell, 1985; Milgram & Milgram, 1976), no differences have also been reported (e.g., Loeb & Jay, 1987). As well, though the research on the learning disabled has consistently indicated them to have lower self-concept than non-handicapped students (e.g., Hiebert, Wong, & Hunter, 1982; Silverman & Zigmond, 1983; Tollefson, et al., 1982), other studies either find no differences or mixed results are reported (see Chapman, 1988).

In metacognition with respect to reading, beginning and poor readers have been found to manifest a lower metacognitive awareness than children in higher grades and good readers (Paris & Lindaeur, 1982; Paris & Oka, 1986). However, it is not always clear which specific aspects of reading awareness differentiate beginning from advanced readers or low from average and high ability students (see Kirby & Moore, 1987; Jacobs & Paris, 1987). Also, few studies have examined children's self-perceptions using a comprehensive set of affective and metacognitive instruments, an exception being the study by Paris and Oka, 1986. By examining different areas of children's self-perceptions in one study greater understanding of the overall effect of self-perceptions on academic achievement is likely.

In children's affective perceptions the instruments selected for this study (i.e., Intellectual Achievement Responsibility Questionnaire, Perceived Competence, and Coopersmith's Self-Esteem Inventory) provided both total scores as well as subscale scores. This made it possible to identify the specific aspects of the 3 affective measures studied which distinguish the learning disabled, average achieving and gifted student from one another. However, for the measure of metacognition used in the study i.e., Paris & Jacob's (1984) Index of Reading Awareness (IRA), only a total (composite) score was provided by the test developers. In view of this, though the present study is not a validation study, some preliminary examination of the IRA to identify the specific test items which distinguished between the learning disabled, the average achieving, and the gifted was undertaken. Thus in both the measures of affect and in the awareness of reading strategies, the central concern was the identification of the more or less specific areas that distinguished among learners. The reasons why there are difficulties in identifying consistently, individual and developmental differences in affect and metacognition have been speculated upon by different authors. Some of these problems receive further attention below.

Various researchers have suggested that different results tend to be obtained in developmental and individual difference research in affect and metacognition mainly because of differences in instruments used, and intervening variables such as, intelligence, age/grade, SES, and institutional context, some of which function as confounding factors (Eccles & Midgley, 1989; Olszewski-Kubilius, Kulieke, & Krasney,1988). The problems concerning differences among the learning disabled, average achieving and gifted can often be attributed to a lack of clearly delineated comparison groups and a tendency to use samples with different compositions, yielding subject groups that cannot be compared across studies. This area will therefore be focused upon in the present study. The use of clearly delineated comparison groups may help in identifying the specific test items of the Index of Reading Awareness (IRA) on which learners differ. In line with the above reasoning, the review of literature raises the following questions examined in the study.

C. Research Questions

1. Do the learning disabled, average achieving and achieving gifted students differ significantly with respect to their:
    a. Perceived Competence in the- Cognitive, Social, Physical, General domains?
    b. Locus of Control - Total Internal Locus of Control, Internal-Failure, and Internal-Success?
    c. Self-Esteem -Social, Home, School, General, Total?
    d. Metacognitive reading awareness?
2. Do grade 4 students differ from grade 7 students with respect to the above self-perception and metacognitive variables?

D. Significance of the Study

This is a systematic attempt to contribute to the clarification of the conflicting findings occurring in the affect research literature concerning developmental and individual differences among the learning disabled, average achieving, and achieving gifted. Specifically the study helped to identify areas of perception of competence, locus of control, self-esteem and Index of Reading Awareness in which developmental and individual differences exist among learners. This study further helped to identify those aspects of affect and metacognition with respect to reading which can be incorporated into definitions of learning disability and giftedness, i.e., the criteria for identifying the learning disabled, and gifted students. The study explored the relationship between three affective variables and metacognitive awareness with respect to reading. As well the study was intended to help identify some of the critical affective and metacognitive aspects in reading which need modification especially in the education of the learning disabled.

E. Outline of the Study

In chapter 1, the purpose, rationale, research questions, and the significance of the study have been presented. The literature review illustrates the conflicting results identified in a number of empirical studies related to the developmental and individual differences in children's affective development and suggested possible ways of resolving these problems. Finally, a possible relationship among perceived competence, locus of control, self-esteem and awareness of reading strategies was speculated upon. In chapter 3, details of the research design, identification of diagnostic groups, and description of the specific instruments used in the study are provided. Chapter 4 presents the results while in chapter 5 examination and discussion of the research questions are presented.

F. Terms used in the study

Achievement: For purposes of the study, achievement was defined as a standardized score obtained on the reading comprehension subscale of the Canadian Achievement Test (CAT: 1983).

Average Achieving: The average achieving was a student within the regular classroom who obtained a score within 1 standard deviation of the mean on the verbal and nonverbal subscales of the Canadian Cognitive Abilities Test (1984); and within a one half grade below and one a half grade above grade level on the reading comprehension subscale of the Canadian Achievement Test (CAT: 1983).

Gifted: A gifted student was identified as one within the regular class who obtained a score one or more standard deviations above the mean on the verbal and nonverbal subscales of the Canadian Cognitive Abilities Test (Canadian Cognitive Abilities Test: 1984); one grade above grade level on the reading comprehension subscale of the Canadian Achievement Test; and was rated by his/her teacher above the population average on 3 subscales of the Renzulli, et al., (1976) - i.e., learning, motivation, and creativity- subscales.

Learning Disabled: The learning disabled student was one who obtained a score within one standard deviation of the mean on the verbal and non-verbal subscales of the Canadian Cognitive Abilities Test (1984); and one or more years below grade level on the CAT (1983) reading subscale.

Locus of Control: Locus of control was defined as a measure of the extent to which children perceived themselves to be in control of events in their lives, by assigning causes to the events in their lives, in terms of whether the events were internally caused.

Perceived Competence: Perceived competence concerned the evaluative statements children made about the extent to which they felt themselves able or competent in a given area such as in the cognitive, social, physical or general areas of functioning.

Internal Success: This was defined as the aspect of total locus of control concerned with the extent to which students accepted responsibility for success experiences.

Internal Failure: This was the aspect of total locus of control concerned with the extent to which students accepted responsibility for failure experiences.

Internal Total: This was synonymous with internal locus of control and was composed of internal failure and internal success, i.e., the extent to which children accepted responsibility for both success and failure experiences.

Self-Esteem: Self-esteem concerned the evaluative statements children made with respect to their general self-worth, respect, or pride experienced in connection with their academic work and related activities.

II. LITERATURE REVIEW

A. Introduction

Though individual and developmental differences in children's self-perceptions have been studied extensively (e.g., Chapman, 1988; Coopersmith, 1981; Dweck, 1986; Harter, 1982; Rotter, 1966; White, 1959), the specific areas in which children differ still remain problematic. This seems to be the case with respect to perception of competence (Harter, 1982), locus of control (Rotter, 1966) and self-esteem (Coopersmith, 1981) but less so with metacognitive reading awareness In an attempt to compare many of the studies within the affective area (Chapman, 1988), difficulties were encountered because the studies used different contexts and sometimes lacked clearly delineated comparison groups. The conflicting results in the affective literature will be illustrated with respect to self-concept and locus of control and some suggestions made as to why these ambiguous findings exist. With respect to metacognitive reading awareness the general trend of individual and developmental differences will be summarized. These discussions will lead to some tentative hypotheses concerning a possible relationship between different areas of affect and metacognitive awareness in reading (i.e., The Index of metacognitive reading awareness).

B. Developmental differences in affective perceptions

In the validation of Perception of Competence Scale for Children, Harter (1982), in 2 separate samples (i.e., California, n=746; Colorado, n=296) reported stable means for all subscales (i.e., cognitive, social, physical, and general) across grades 3 to 9, adding that "this trend was replicable" (p. 92) (see Table 1). Other authors using Perceived Competence Scale for Children (Harter, 1982) among grades 3 to 9 students have replicated Harter's (1982) findings concerning the stability of competence perception scores (e.g., Connell & Tero, 1982). Connell and Tero (1982) for example used Harter's Scale together with other measures to study the perception of competence of children in grades 4 to 8 but found no age-related changes in competence perception, confirming Harter's (1982) earlier findings.

In the studies reported in Harter (1982), apart from the stable subscale means for grades 3 through 9 in both the California and Colorado samples, Harter (1982) noted also that teachers were able to judge children's cognitive competence more accurately at higher than at lower grades, and that across 4 samples examined, the correlation between teacher and student ratings of students' competence increased from grades 3 to 9. That is, the gap between objective scores and perceived competence narrowed at higher grades. This was interpreted to mean that children became more aware of their actual competence level over the years. A number of studies have however reported decreasing developmental trends in competence perceptions as a function of grade (e.g., Berndt, 1987; Berndt, & Hawkins, 1987; Nottelman, 1982; 1987; Milgram & Milgram, 1976). These latter studies used a mixture of general and specific competence perception instruments.

Milgram and Milgram (1976) compared high IQ gifted and non-gifted children on the Tennessee Self-Concept Scale, and noted that the 7th graders had less positive self-perceptions compared to 4th graders about their competence but transition effects seemed to influence the results (see Eccles & Midgley, 1989). That is, if children moved into a new school of a more complex social structure, and there were higher teacher-expectations, it was likely to affect children's coping and adjustment skills, by lowering their self-perception scores. Eccles and colleagues (Eccles, et al., 1983; Eccles, Midgley, & Adler, 1984) also examined ability self-concept for perceived math and English among grades 5 to 12 and noted a decline in perception of math competence from grade 6 to 7, but not in English competence perception. Berndt and colleagues (Berndt, 1987; Berndt & Hawkin, 1987) using Harter's (1982) Perceived Competence Scale for Children (Harter, 1982) to study grades 6 and 7 students noted a decline in competence for all subscales.

In locus of control research, though the available studies examined were few, conflicting results appeared to exist as well. Connell (1980) examined perception of control over known and unknown outcomes at grades 3 to 9 using a multidimensional measure of locus of control and noted an increasing developmental pattern for known over unknown causes. This was replicated by Connell and Tero (1982). Gottfried (1981) studied academic intrinsic motivation for reading, math, social studies and science among grades 4 to 7 and found a decline at grade 7 in all subjects. Also, Harter (1980, 1981) using the Extrinsic vs Intrinsic Orientation Scale, to study intrinsic motivation among grades 3 to 9, found a decreasing developmental trend from lower to higher grades. When Prawat, Grissom and Parish (1979) studied academic locus of control together with other measures at grade 3 to 12 levels, children's academic locus of control tended to be stable across the grades.

Wittrock (1986) in a handbook edited by him, noted that "children's concepts of the causes of their successes and failures develop from a relatively undifferentiated state to a more differentiated conception of the relations among ability, effort, and achievement" (Wittrock, 1986, p. 304). This observation tends to support the developmental hypothesis.

The results of self-esteem research were not different from the general pattern of conflicting research in students' locus of control. In Prawat, Grissom and Parish (1979) referred to above, global self-esteem of grades 3 to 12 students, measured by the Piers-Harris Self-Esteem Inventory, was examined with other measures but did not manifest a developmental pattern. Thornberg (1985) used Simmons and Rosenberg's Self-Esteem Scale to study elementary school children from grade 6 to 8 and as well reported no developmental trends. However, a number of individuals have used Simmons and Rosenberg's Self-Esteem Scale, a measure of general self-esteem at grades ranging from 3 to 12, and have reported a declining developmental trend in self-esteem as a function of grade (e.g., Blyth, Simmons, & Bush, 1978; Blyth, Simmons, & Carlton-Ford, 1983; Simmons & Blyth, 1987; Simmons, Rosenberg, & Rosenberg, 1973; Thornburg & Glider, 1984; Thornburg, & Jones, 1982). However, using the same Simmons and Rosenberg's Self-Esteem Scale to study grades 5 and 6 students, Jones and Thornburg (1985) found no developmental changes. The Piers-Harris Self-Concept

Scale was used by Larson (1982; 1983) to study the self-esteem of grades 6 to 8 students. An increasing developmental pattern existed though the study did not cover lower grades.

The review of developmental differences in children's self-perceptions shows clearly that conflicting results exist in the empirical literature though a lot of studies have been done in the area. These conflicting research results are manifested in individual difference research as well, as the review below will indicate.

The psychological literature is full of theories and empirical studies concerning individual differences in children's affective perceptions. As well, some of the extant notions of differences in affective perceptions among learners have evolved from topics incidental to affect, in areas such as learned helplessness (Dweck & Licht, 1980; Fincham & Cain, 1986), attribution (Heider, 1958; Weiner, 1974; Yussen, 1985), stage-environment fit (Eccles & Midgley, 1989), socialization (Vygotsky, 1962, 1978) and development of intervention programs for the socially disadvantaged (Feuerstein, 1979) or learning disabled adolescents (Deshler, Warner, Shumaker, & Alley 1983). In spite of these developments and proliferation of research findings, the specific areas of affect in which individual differences exist have been uncertain since research results appear equivocal. Examination of a representative sample of individual difference research with respect to the affective perceptions of learners will illustrate this.

C. Individual differences and self-concept research

Many individuals have observed that the way one perceives oneself affects behaviour in future endeavours (Dweck, 1986; Fincham & Cain, 1986; Schunk, 1989). The term often used to explain the evaluative statements one makes concerning one's abilities, and values is self-concept (Byrne, 1984; Chapman, 1988). The concept tends to be used in association with perceived competence (Harter, 1982), and self-esteem (Coopersmith, 1981), both of which are individual difference variables. That is, the learning disabled, average achieving and gifted tend to differ with respect to aspects of their self-concept (Fincham & Barling, 1978). However, there are studies that indicate no differences among learners, suggesting that more research designed to resolve these conflicting findings is necessary.

In gifted research on self-concept, less ambiguity seems to exist with respect to individual differences, with the gifted generally seen as having higher self-concept than the non-gifted. Ross and Parker (1980) observed that the intellectually gifted 5th and 8th graders demonstrated significantly higher self-concept than those of the non-gifted of comparable grades, but the social self-concept of gifted children in general was lower than their own academic self-concept. This seemed to apply more to grade 8 than to lower grades however. Winne, Woodlands and Wong (1982) also found that gifted students in special programs (which they defined solely on the basis of high IQ) as compared with the non-gifted (in regular classes) possessed a higher academic self-concept.

High IQ gifted elementary school children obtained higher scores on the personal worth and self-esteem subscales of the California Test of Personality (Lehman & Erdwins, 1981). Maddux, Scheiber, and Bass (1982) also found that high IQ sixth graders in special classes possessed higher self-esteem than the non-gifted in regular classes, but this difference was not observed at grade 5 level on the Piers-Harris Self-Concept Scale. As well, Ketcham and Snyder (1977) found high IQ children between grades 2 and 4 to possess higher self-concept than norming groups of comparable ages on the Piers-Harris Self-Concept Scale. In an adolescent study, Kelly and Colangelo (1984) found seventh through ninth grade males to have significantly higher social and academic self-concepts than age mates who were not in a similar gifted program. No differences were found for females however.

In spite of this preponderance of positive findings of higher self-concept for the gifted over the non-gifted, a number of researchers have also reported contrary findings (e.g., Loeb & Jay, 1987; Karnes & Wheery, 1981). Loeb and Jay (1987) studied 9 to 12 year olds, and found no differences between the gifted and non-gifted on the Piers-Harris Self-Concept Scale. Milgram and Milgram (1976) using the Tennessee Self-Concept Scale found the gifted 4th through 6th graders compared to the non-gifted to possess greater self-worth and personal adequacy in the family. But older (7th and 8th graders) had less positive self-perceptions than their same-age non-gifted peers. Karnes and Wherry (1981) studying 4th to 7th graders enrolled in gifted programs - found no differences between the gifted and non-gifted on the Piers-Harris Scale. However, when

Karnes and Wherry (1981) compared the gifted in their study with a normative group, the gifted students scored significantly higher on the Piers-Harris. In the above programs the gifted were in special programs whilst the comparison groups were in regular classes.

While it can be argued on the strength of numbers of positive relative to negative findings that the gifted have higher self-concept than the non-gifted, there are enough conflicting results to indicate a need for more comprehensive studies to be conducted.

Learning disability research comparing the learning disabled with non-disabled in self-concept appears quite extensive (see review by Chapman, 1988), but here too, though strong indications exist that the learning disabled have lower self-concept than the non-disabled (e.g., Black, 1974; Bruininks, 1978; Bryan & Pearl, 1979), there are other studies which report either opposite or mixed findings (e.g., Hiebert, Wong, & Hunter, 1982; Silverman & Zigmond, 1983; Tollefson et al., 1982). Chapman noted that while there may be no differences with respect to general self-concept, definite differences exist with respect to academic self-concept.

Ribner (1978), for example, found the self-concept of minimally brain damaged individuals (a subset of the learning disabled) to differ from their normal peers. Yauman (1980) noted with respect to Piers-Harris Self-Concept Scale that normally achieving elementary school boys scored higher than learning disabled boys in regular classes. However, when he controlled for reading scores, there were no differences observed between the groups, suggesting that reading achievement influenced the results.

Larsen, Parker, Jorjorian (1973) found the learning disabled at the elementary level to be more discrepant in real versus ideal perceptions than the non-handicapped. Black (1974) using a clinical sample, reported lower self-concept scores for the learning disabled relative to the non-disabled. Also, using an adult sample in a longitudinal study, with an interviewing technique, Major-Kingsley (1982) noted that the learning disabled evidenced negative feelings of self and low self-concepts when they were young, though there were no comparison groups in the study.

Hiebert, Wong and Hunter (1982) using an academic self-concept scale studied 39 learning disabled and 43 normally achieving at grades 8 and 10 and noted that the learning disabled children evidenced significantly lower self-concept than the normally achieving and grade 10 obtained higher scores than grade 8 students.

However, Mann (1960) reported contrary results, noting that elementary school children in low-ability groups in special programs evaluated themselves more positively than those in normal/regular classes. Silverman and Zigmond (1983), using the Piers-Harris Scale and an urban sample to study 159 learning disabled adolescents from grade 6 to 12, found no significant differences in their self-concept, compared to a normative contrast group. The same researchers replicated the study using both urban and rural populations, but still found no differences between 40 learning disabled adolescents and the norming group. Also no relationship was observed between achievement and self-concept. Similarly, Tollefson, et al., (1982) administered the Rosenberg Self-

Esteem Scale (Rosenberg, 1965), which is a general self-esteem instrument, to 35 learning disabled adolescents but found no differences between them and a 99 non-handicapped contrast group.

As a possible explanation for these conflicting results, Boersma, Chapman, and Maguire (1978) demonstrated that the lack of differences between the learning disabled and non-LD may be due to the low sensitivity of the measures used. In Boersma, Chapman, and Maguire's (1978) study, while the specific instrument, Perception of Ability Scale distinguished the LD from the non-LD, the total general self-concept scale - i.e., Piers-Harris Self-Concept Scale for Children, did not. Thus using multiple measures of self-concept (i.e., Piers-Harris & Perception of Abilities Scale) Boersma, Chapman, and Maguire (1978) found that more specific measures of self-concept may be needed to differentiate between the learning disabled and the non-handicapped. The sensitivity of the instrument however may be only one source of the problem.

Bender (1987) has suggested that another possible explanation for the negative findings on general self-concept is "a developmental trend in which as these children grow older, they develop a more positive and realistic self-image - independent of school failure" (p. 281). It may also be that the learning disabled are not after all different from the normal achieving in some areas of self-concept, e.g., general self-concept. In a very extensive meta-analytic study, Chapman (1988) concluded that

> the findings do not support the belief that learning disabled students have low general self-concepts. Rather, they tend to

> have general self-concepts that are lower than the non-handicapped peers whose achievement levels are unspecified...On the other hand findings for academic self-concept are unequivocal. LD students across a range of studies, consistently reported lower academic self-concepts than the non-handicapped. p. 26).

It appears that performance in academic areas is more likely to reveal lower self-concepts for the learning disabled relative to the normal achieving. But even this may be confounded by the type of program. The learning disabled students in special programs are more likely to rate themselves as more able since they do not have any other higher criteria to compare their performance with.

Apart from self concept differences among learners, researchers interested in affective perceptions have investigated students' locus of control which is reviewed below.

D. Individual differences and locus of control

Many individuals have studied attribution from various perspectives, ranging from Weiner's (1974, 1986) achievement motivation, and Heider's (1958) Naive Psychology, to Rotter's (1966) locus of control. They have come to similar conclusions that whether we attribute our successes and failures to internal forces within us or to external forces, may be critical in determining our future achievement behaviour. It will determine whether we initiate new actions, and persist in the face of difficulties or not. Since these behaviours, attitudes and associated perceptions underlie the learning process, any negative affective patterns associated with locus of control, manifested in learners, are viewed with concern by educators. Learning disability research has devoted much attention to the locus of control of these learners (Harter & Zigler, 1974; MacMillan & Keogh, 1971; Nicholls, 1978; Harter, 1978; Milgram & Milgram, 1976), and has found the LD to be generally lower in internal locus than the non-LD.

Basing their findings on seven studies of the locus of control of the LD, and using both general and academic locus of control instruments, Dudley-Marling, Snider, and Traver (1982) noted that the learning disabled were overall, more likely to have an external locus of control, and to attribute their successes to external forces, than the non-LD.

Fincham and Barling (1978) conducted a study on the relationship between locus of control, measured by the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky & Crandall, 1965) and the generosity of the learning disabled, average achieving and gifted, using 9/10 year old males (N=34). The LD were the least internally oriented, and the gifted the most. However, owing to the small sample size and the restriction of the study to male subjects, generalization of the results are somewhat limited.

Harter and Zigler (1974) found that normally developing children were more intrinsically motivated than handicapped children of the same mental age. Harter (1978) also found differences in favour of the normal achieving with respect to mastery of challenging tasks. MacMillan and Keogh (1971) demonstrated that the LD, compared to normal children tended to be self-blaming. It was confirmed that this expectancy for failure tended to persist even when the LD were reminded that they were successful or the events they were involved in had a neutral consequence (MacMillan & Keogh,. 1971). Keogh, Cahill, and MacMillan (1972) also found that failure expectancy and self-blaming attitude were more characteristic of 12-year old LD's but not for 9-year old LD's. This suggests that onset of this negative affect may begin around grade 3 (see Harter, 1982).

Hallahan, Gajor, Cohen, & Traver (1978) compared 28 junior high LD and non-LD, matched on school, sex, race, chronological age, grade level, and mental age, using both a general measure of locus of control (Norwicki-Strickland &, 1973) and academic locus of control (IAR - Crandall, Katkovsky & Crandall, 1965). Both the general and the academically specific measure of locus of control differentiated the learning disabled from the matched non-handicapped group. The learning disabled manifested lower internal locus of control. However, Hallahan, Gajor, Cohen and Traver's (1978) results were not replicated by Tollefson, Tracey, Johnson, Buenning, Farmer, and Barke (1982). When Tollefson et al. used the IAR to study 35 learning disabled compared to 99 non-handicapped students selected by the school principal, in which a matching procedure was not used, there was no differences between the total general locus of control of the learning disabled and the non-handicapped.

Aponik and Dembo (1983) investigating attributions of success and failure using academic locus of control (IAR) measure and a random selection of 36 learning disabled and 36 high-achieving adolescents, showed that the LD attributed success less to their own ability than did the non-LD students. Aponik and Dembo (1983) alluded to a possible developmental trend based on the stress special education programs place on individual effort, as a possible cause of increased internal attributions among older students with learning disabilities, and suggested that developmental studies are necessary to clarify the issue with respect to adolescent populations.

Rogers and Saklofske (1985) studied locus of control beliefs among 45 learning disabled and 45 normally achieving students aged 7 to 13 using the Nowicki-Strickland Locus of Control Scale for Children, a general locus of control instrument (Norwicki & Strickland 1973). The learning disabled manifested lower internal locus of control than the normally achieving. Cooley and Ayres (1988) studied 46 learning disabled and 47 normally achieving, with a mean age of 12.0 years, using the IAR (Crandall, Katkovsky, & Crandall 1965), an academic locus of control measure, and found the learning disabled not to differ significantly from the normally achieving on attributions regarding internal vs external causes for success and failure. Bladow (1982) also studied locus of control among grades 3 to 6, using 32 lower middle-class learning disabled, and 32 non-LD using a general locus of control measure (Norwicki-Strickland Scale), and matching subjects on age (9-13 years), and sex (27 boys and 5 girls each). He found no significant difference in external or internal locus of control.

Several other studies using a variation of both general and academic locus of control scales have also found higher levels of external attribution for the learning disabled relative to the non-handicapped (Bladow, 1982; Boersma & Chapman, 1979; 1981; Keogh

& Cahill, 1971; Pearl, Bryan & Donahue, 1980). Apart from manifesting higher external locus, it seems that though the LD more than the normal achieving readily accept responsibility for their failure experiences, they are unable to take credit for their successes, the same as the normal achieving (Adelman & Taylor, 1983; Pearl, 1982; Perna, Dunap, & Dillard, 1983).

In spite of these findings of high external locus of control or lower internal locus for the LD, Tollefson et al., (1982) found no significant differences between the locus of control of the learning disabled and that of the non-LD. As well, conflicting results have been reported on the locus of control differences between the learning disabled and non-handicapped elsewhere (e.g., Aponik & Dembo, 1983; Hallahan, Gajor, Cohen, & Tarver, 1978).

According to Delisle and Renzulli (1982), studies that relate locus of control of the gifted with non-gifted also produce mixed findings. However, generally, the gifted seem to have relatively higher internal locus than the non-gifted (e.g., Davis & Connell, 1985; Dweck & Repucci, 1973; Lucito, 1964; Milgram & Milgram, 1976).

Milgram and Milgram (1976) using an instrument developed locally, to study the locus of control among grades 4 to 7 high IQ students, observed significantly higher internal locus for the gifted, especially assuming responsibility for past events, than a non-gifted contrast group. Davis and Connell (1985), after examining the locus of control of 4th, 5th, and 6th grade high IQ students, found them to be higher on intrinsic motivation and lower on external locus compared to a contrast non-gifted group. Lucito (1964) studied gifted 6th graders and found them less conforming compared to a normative group. As well, Dweck and Repucci (1973) compared mastery-oriented (gifted) with learned helpless (LD) group on academic locus of control, using the IAR Scale. They noted that the mastery-oriented group tended to attribute both success and failure experiences to effort rather than external events, whereas the opposite was true for the learned helpless group. However, when Loeb and Jay (1987) studied locus of control (IAR) among 9 to 12 year olds, no differences were found between the gifted and non-gifted. Dweck and Colleagues have also (see Dweck, 1986, p. 1043) indicated that high ability and achievement may not have a direct causal relationship with affective measures.

The review of empirical research on individual differences in the affective development of the learning disabled, average achieving and gifted was quite selective. It concentrated on research in self-concept, which was assumed to include perceived competence and self-esteem, and research on locus of control among elementary and junior high students. Though on the strength of numbers alone, there is little doubt that the gifted tended to have the highest and the learning disabled the lowest perception of competence, self-esteem and locus of control, there were enough "no-difference", mixed or/and conflicting results to suggest that further studies are needed to resolve these conflicts in future. Apart from differences in students' affective perceptions, many researchers have also examined children's metacognitive perceptions with respect to specific subject areas. One specific area which has gained popularity in individual difference research is metacognitive reading awareness (see Kirby & Moore, 1987; Jacobs & Paris, 1987; Paris & Jacobs, 1984; Paris & Oka, 1986).

E. Developmental and individual differences in Metacognitive Reading Awareness

Metacognitive reading awareness may be viewed as metacognition with respect to reading. Though metacognition has been discussed actively since 1977, the conceptual difficulty of pinning down the construct still remains. While Ann Brown and associates (Brown 1978; Brown, Armbruster, & Baker, 1984; Brown, Bransford, Ferrara & Campione, 1983) emphasize the conscious/intentional aspect, Flavell and others (Flavell, 1977; 1978; 1979; Flavell & Wellman, 1977) included affective and motivational aspects as well (see Jacobs & Paris, 1987, p. 257).

Because of these conceptual difficulties many researchers avoid definitions and concentrate on the knowledge about a given activity and the executive/control strategies such as planning, monitoring, and evaluation (see Kirby, 1984; Lawson 1984; Marzano et al., 1988) that regulate thinking. Attempts to measure metacognition have also met with difficulties owing to the issue of unconscious and subjective processes that are involved in the construct. Nevertheless, most measuring instruments tap Flavell's (1977) original person, task, and strategy knowledge variables. However, deciding between the use of interview questionnaires as opposed to inferring knowledge and executive control from performance, has not been settled. It is fair to say however that to date, most studies of children's awareness of reading variables use interviews to measure metacognition (Jacobs & Paris, 1987; Kirby & Moore, 1987; Paris & Jacobs, 1984; Myers & Paris, 1978). With the help of these metacognitive interviews, it has become increasingly possible to describe developmental and individual differences that may exist as a function of grade and ability as well as task characteristics.

According to Gibson (1974) cited by Paris and Lindaeur (1982),

> There seems to be a consciousness-raising that goes along with many aspects of cognitive development, and it turns out...to be associated with attaining mature reading skills p. 339.

According to Myers and Paris (1978), the answer to the question, "What kinds of metacognitive understanding do young children and low-ability groups have about reading?" is "not much"; this is particularly evident in preschoolers. But as they enter school and ascend the grades, there is rapid and successive development in their awareness of reading variables.

For example, Clay (1973) found beginning readers (5 year-olds) to be ignorant about the functions of print as opposed to pictures in telling a story. At 7-years, this insight is evident, but even these 7-year olds were often unaware of how to correct their comprehension when reading. By age 8 to 12, striking improvements in metacognitive awareness of reading are evident. Myers and Paris (1978) noted that older 12 year olds know that the construction of meaning is the central goal of reading and can decipher meaningless information. Johns (1980), Reid (1966), Wixson, Boskyt, Yochum, and Alvermann (1984) found similar characteristics of pre-schoolers and similar trends in the development of metacognitive awareness in reading. Also, Kobasigawa, Ransom, and Holland (1979) found that older children understand the use of skimming strategies, and can adjust reading strategies to suit different reading goals (Forrest & Waller, 1978) (see also Paris & Lindaeur, 1982, p. 339) but younger students cannot. A few representative studies referred to above are described in more detail since they have a more direct bearing to the present study in terms of the use of the metacognitive interview to tap metacognitive reading awareness.

Myers and Paris (1978) were among the first to study systematically the metacognitive awareness of reading among elementary school children. The instrument used was a scripted free-response interview of 18 items designed to assess person, task and strategy knowledge about reading. The 18 items were grouped as follows:

Items	Area covered
1,2	specialized skills
3	motivation and limitations
4,5,6	materials
7	reading mode
8,9,10	structural cues
11,12,13,14	goals
15	skimming
16,17,18	resolving comprehension failure

On comparing 20 second and 20 sixth graders on these 18 items it was noted that the sixth graders were significantly more aware of reading variables than grade 2 students. Of the 4 out of 18 items that did not discriminate between grades 2 and 6 students, 3 items (4,5,6) referring to *materials* (i.e., length of passage, familiarity of the story content, and interest in the story) appear to tap lower level metacognitive reading awareness.

Myers and Paris' (1978) study provided only grade-related information; limited the study to elementary and junior high students, and did not examine the effect of ability differences on awareness. In a second study (Paris & Myers 1981), the same authors compared good and poor readers at grade 4 level only. They found good readers to be significantly more aware than poor readers at the same grade level.

These two studies used Myers and Paris' (1978) 18-interview items. In examining this instrument, Kirby and Moore (1987) found that the answers to each question had been categorized on a different nominal scale. "As a result, it is difficult to see any but the most general trends in the data" (p. 20). Because of this limitation, Kirby and Moore (1987) conducted a study in which this instrument was further revised and additional grade and ability-level features added.

Kirby and Moore's (1987) study involved 29 grade 2, 29 grade 4, and 30 grade 6 students of an urban elementary school. These children were divided into high and low ability groups based on performance on standardized achievement test. They were then administered a 15-item interview schedule developed from Myers and Paris' (1978) 18-item interview schedule, that produced 4 factors (i.e., withholding closure, semantic selection, reading skill, and use of context). Significant grade-related differences were observed for withholding of closure, semantic selection and use of context. Reading skill manifested a trend toward significance. The authors also observed some grade x comprehension interaction effect "due to superior performance by the high-ability sixth-graders" (p. 131). That is, there were developmental differences in metacognitive awareness in reading. They found that for withholding of closure, "within-grade comprehension groups differed in developmental level" (p. 131). For semantic selection and use of context, reading ability differences were evident only in grade 6. This suggests that not all aspects of metacognitive awareness with respect to reading discriminate among high and low-ability groups, especially at a level below grade 6.

Another source of our understanding of developmental and individual differences in metacognitive awareness with respect to reading comes from metacognitive training studies (e.g., Jacobs & Paris, 1987; Paris & Jacobs, 1984; Paris & Oka, 1986).

Paris and Jacobs (1984) trained third and fifth graders in metacognitive awareness in reading with metacognition measured before and after training using an interview schedule based on a modified version of Myers and Paris (1978) open-ended interview schedule. Children's metacognitive reading awareness scores were significantly higher at post-test than pretest, and the fifth graders scored significantly higher than third graders at both pre- and post-test points. As well, children manifesting high, middle, and low awareness in reading (based on their metacognitive awareness scores) also manifested significant differences in standardized reading tests, and reading comprehension measured by the *cloze and error detection tasks*. The higher children's awareness in reading, the higher their achievement and comprehension scores.

Paris and Oka (1986) also conducted training studies similar to Paris and Jacobs' (1984) study using the Index of Metacognitive reading awareness, a group-administered instrument of 22-multiple-choice questions to measure metacognitive reading awareness. This instrument was derived from Paris and Jacobs' (1984) Scale (see method section for a detailed description of the instrument). Unlike previous interview schedules, Paris and Oka's scale was easy to administer (group-administered), saved time, and was standardized (used multiple-choice format). Eight hundred each of third and fifth graders from a wider catchment area (28 schools and 25 teachers) were involved.

Both experimental effect (training), grade-effect and achievement-differences effects were manifested. That is, grade 5 students were significantly more aware at pre- and post-test points than 3rd grade; experimental groups were significantly more aware than control groups, and high ability groups were more aware than low-ability groups. These results are directly related to the present study in terms of use of instruments, and thus will receive more attention in the discussion section.

F. Possible sources of conflict in the developmental and individual difference research

In an extensive meta-analysis of developmental differences associated with school transitions, using both general and academic self-esteem instruments, Eccles and Midgley (1989) concluded that "both grade-related changes and transition effects may depend on the educational environments the students move out of and into" (p. 159).

Apart from transition effects however, other intervening variables such as cognitive abilities, type of instruction, socio-economic status, gender, and even wording of affective test items, have also been identified in the literature as potential confounding factors (see Bladow, 1982; Donaldson, 1978; Olszewski-Kubilius, Kulieke, & Krasney, 1988). One would think that clearly delineated comparison groups, in which the samples have been matched on a number of possible confounding variables is likely to increase the chances of obtaining more valid and reliable developmental results, and minimize some of the conflicting discrepancies in the affective development literature.

Delineation of constructs

One of the sources of the conflicting results identified in the affective literature on differences among the LD, average achieving and gifted was the global nature of many of the constructs and instruments for measuring these constructs. A number of individuals have questioned the usefulness of broad affective constructs in distinguishing among learners (Harter, 1982; Shavelson, Hubner & Stanton, 1976). This prompted Shavelson, Hubner, & Stanton (1976) to propose a multifaceted model of the self. That is, they proposed a model that divided self-perceptions into specific areas. The rationale was that, the more specific a test of perception is to a given content area, the more relevant it is to that situation (Boersma, Chapman, & Maguire, 1978). Thus cognitive self-perception should be more closely related to academic achievement than social and physical perceptions (Chapman, in press, p. 4). Harter (1982) adds to this by noting that some of the instruments measuring the constructs of self-concept and self-esteem are "vaguely defined at the conceptual level and therefore, do not point to any clear operational definition" (p. 87). According to Harter (1982) these general self-concept scales include Piers-Harris Self-Concept Scale and Coopersmith's Self-Esteem Inventory. She added that such general constructs assume that children do not make distinctions among different domains of their lives, and that this assumption has been seriously questioned (Epstein, 1973; Rosenberg, 1979; Shavelson, Hubner, & Stanton, 1976). By identifying specific domains of affect and assigning separate scores instead of a composite score for the construct, a more accurate picture of children's affective characteristics may be found.

The problem with many of the affective variables compared with each other was that they seemed to be more or less specific. Epstein (1973), Rosenberg (1979), and Harter (1982) recognized the "hierarchical nature of the self-evaluation process whereby self-esteem or self-worth (was) viewed as a superordinate construct, and competence judgments represent one type of lower-order evaluative dimensions (Harter, 1982, p. 88). General self-concept and general perceived competence seemed to be less related to academic content, and more related to a general sense of or feeling of self-worth, esteem, and respect. Locus of control emphasizes the direction one is able to give to events.

Delineation of comparison groups

One problem area in individual difference research that compares the gifted with the non-gifted is the definition of giftedness. Different definitions found in the literature have given rise to different identification procedures which make samples in one study not comparable with samples in other studies. In both research and educational practice, comparisons are often made between students who perform below and those who perform above the average at various grade levels. Educators however recognize the hypothetical nature of "the average" in the sense that it has more statistical than operational significance. To obtain individuals who are normal in every conceivable area is impossible. However, for purposes of research, students who obtain mean scores on cognitive abilities and appropriate grade level scores on achievement tests are usually identified as average achieving. Few studies however were found in the literature that used specific identification procedures for the average achieving. It seemed appropriate to adopt reading as an identification criterion because many individuals have found reading to be relevant to most school activities (Bos & Vaughn, 1988; Carey, 1987).

Many individuals have written concerning the characteristics of the gifted (cf, Delisle, & Renzulli, 1982; Hildreth, 1966; Gallagher, 1975; Gardner, 1983; Lucito, 1964; Sternberg & Davidson, 1986; Terman & Oden, 1959). For example, Delisle and Renzulli

(1982) described the gifted as possessing extraordinary capacity for learning, being precocious, and reaching the height of accomplishments at relatively earlier ages than their normal peers. Other individuals have observed the gifted to possess many cognitive abilities (Gardner, 1983; Hildreth, 1966; Tennenbaum, 1983). The gifted can memorize rapidly and retain what they read. They have advanced vocabulary and superior comprehension. They readily notice relationships among events and are curious, thoughtful and interested in abstract ideas (Hildreth, 1966). The gifted have also been noted to object to rote memory and drill (Whitmore, 1980), and to prefer less structure, being generally more independent, self-motivated, and self-directed (Ehrlich, 1982). As well, many observers have found the gifted to be highly creative (Gardner, 1983; Renzulli, 1978; Sternberg & Davidson, 1986). Using Dunn, Dunn and Price Inventory, the Dunn and Price (1980) in a study involving 109 grades 4 to 8 students identified six variables that distinguished the gifted from the non-gifted: preference for a formal design of instruction, less structure, less responsible, preference for learning through tactile and kinesthetic senses, and lower preference for using the auditory senses (Torrance, 1986, p. 633). Griggs and Price (1982) observed similar distinguishing variables but in addition noted that the gifted were more intrinsically motivated.

That is, giftedness covers many abilities of all kinds (Sternberg, 1986; Sternberg & Davidson, 1986; Gardner, 1983), but there is no agreed-upon norm for selecting criteria for the identification process. When giftedness is viewed as a range of gifts, some individuals limit the definition to IQ scores (Terman &

Oden, 1959; Hollingworth, 1959) using a cut-off of 130 and above. However, others prefer a broader range of gifts that may include cognitive, affective, and behavioural variables (e.g., Renzulli, Smith, White, Callahan, & Hartman, 1976; Sternberg & Davidson, 1986).

Through an extensive review, Sternberg and Davidson (1986) built a rationale for identifying the gifted that was based on a wide range of abilities: intellectual skills in verbal, quantitative, spatial, and memorial areas; skills associated with adapting to, selecting of, and shaping one's environment; physical skills such as those involved in sports and physical survival under difficult condition. In Gardner's (1983) concept of multiple intelligences, he also presented a wide range of abilities which included both cognitive, affective, and artistic variables.

Other researchers who have actively applied the concept of a broad range of abilities to the identification of the gifted are Renzulli, Smith, White, Callahan, and Hartman (1976). They viewed giftedness to be expressive, situational, universal, and associated with non-intellective abilities. In line with this broad notion of giftedness, they adopted an identification procedure based on a cut-off of 75 percentile or above on reading and math, and on cognitive abilities, as well as on teacher perceptions of students' achievement-oriented characteristics in at least one of four areas: creativity, leadership, learning, and motivation. In the context of this study, a broad identification procedure was utilized to determine giftedness. Students who obtained one or more standard deviations above the mean on verbal, and non-verbal subscales of Canadian Cognitive Abilities Test; and one or more grades above grade level in reading and math on Canadian Achievement Test; as well as above average score on three of the subscales of the Scales for Rating the Behavioural Characteristics of Superior Students (the SRBCSS) (Renzulli, et al., 1976): learning, motivation, creativity, were identified as gifted. This broad conception of giftedness was adopted in the present study to ensure that most of the potentially gifted students in the school population were captured.

A second group of learners often compared with the average achieving is the learning disabled. In the literature, many definitions of learning disability existed, perhaps owing to multiple etiologies of disability ranging from social, neurological, and institutional to psychological causes. Or may be it is because of many disciplines claiming authority over the disability field (Torgesen, 1977).

In the United States, the legal definition (adopted in other countries as well) is based on the position of the 1967 National Advisory Committee on Handicapped Children, in support of the U.S. Public Law 94-142 aimed at equality of educational opportunity. In this definition, the LD were those with normal IQ but experiencing difficulties in one of the basics such as reading or mathematics, coupled with psychological and perceptual problems not due to any physical, social or economic handicaps.

This definition was later found to involve inherent problems. It portrayed the learning disabled as a homogeneous group, but they are a heterogeneous lot. Emphasizing children in the definition suggested that preschoolers and adults could not be learning disabled, which is also not true. As well, the definition could mislead one to think that learning disability is not an interactive process involving factors internal to the learner as well as factors within the environment. Finally, the exclusion clause in the definition suggested that the learning disabled could not come from different ethnic and linguistic groups or be multi-handicapped.

In view of these concerns, modifications in the LD definition were later proposed National Joint Committee on Learning Disability (NJCLD, 1981). The newer definition involved an achievement-ability discrepancy, difficulties associated with cognitive, attentional, social, emotional, and perceptual-motor problems, as well as the idea that learning disability ranges from mild to severe deficits (Berdine & Blackhurst, 1985).

While the LD are recognized as a heterogeneous group in research, the criteria of identification tend to emphasize basic cognitive abilities, and underachievement in the basics. In the context of this study, learning disabled children were identified as those who performed within one standard deviation of the mean on Canadian Cognitive Abilities Test, and were one or more years below grade level on Canadian Achievement Test in reading. There are a couple of reasons why these identification criteria for the LD are adequate though seemingly limiting.

Cruickshank, Bentzen, Ratenburg, and Tannhauser (1961) observed that brain-injured and hyperactive children who have no apparent neurological injuries show similar characteristics as those with neurological problems. Thus the use of cognitive and achievement problems as criteria may indirectly pull in children with neurological problems. Secondly, since reading problems seem to affect most learning disabled children (Kirk & Elkin, 1975; Erb & Mercer, 1979; Mercer & Mercer, 1979; Silberberg & Silberberg, 1977) using reading as an identification criterion would help capture a large proportion of learning disabled children in the school population.

The identification procedure adopted in the present study (see method section) ensures that the learning disabled group would be those experiencing mild problems but that in terms of cognitive abilities, they were at par with their average achieving peers.

Resolving identification problems for the learning disabled, average achieving and gifted still leaves an aspect of the problem of obtaining clearly delineated comparison groups unresolved. This involves sampling problems. After reviewing the empirical literature on personality dimensions of the gifted adolescents, Iszewski-Kubilius, Kulieku and Krasney (1988) noted that affective research "suffers from many methodological problems" (p. 347), e.g., with respect to the gifted, the use of different criteria for identifying the gifted, and comparison between relatively homogeneous samples of gifted students and heterogeneous norming groups.

> One (problem) has to do with the criteria for giftedness, which include the use of IQ, achievement measures, and off-level (non-standardized) tests....(Another) problem arises from comparisons between relatively homogeneous samples of gifted students and heterogeneous norming groups (ibid. p. 347).

The existence and use of "relatively homogeneous samples and heterogeneous norming groups" for comparison in many studies, need to be addressed. When specific criteria are used to identify diagnostic groups, the range of children included in a given group is restricted. That is, the group becomes by operationalization, relatively homogeneous. Thus the LD, average achieving, and the gifted samples are more homogeneous than the norming population for most tests. The norming population whose average score is used for comparison purposes contains children of variable abilities, achievements, and psychological characteristics. In effect, relatively homogeneous samples are compared with heterogeneous norming populations or a contrast group such as "non-handicapped" and "non-gifted", whose compositions are not usually specified. The non-LD may include both average achieving and gifted whereas "non-gifted" may include the average achieving and perhaps the mildly handicapped children; we are not sure. Since in different studies, different comparison groups, having different compositions are used, it makes comparison across studies often difficult. It may therefore be necessary to break the non-LD and non-gifted groups into relatively homogeneous sub-groups, of clearly delineated, learning disabled, average achieving and gifted groups to eliminate this problem.

In many of the affective studies reviewed, small samples were used. For example, Lehman and Erdwins (1981) and Maddux, Scheiber and Bass (1982) used small sized samples of between 16 and 21 subjects. As well, subjects tended to be selected from middle class populations, and compared to norming samples which tended to be representative of the entire population (Olszewski-Kubilius, et al., 1988, p. 348). Additionally, it was noted that with respect to studies reviewed by Eccles and Midgley, 1989, the type of program students, especially the gifted and learning disabled, participated in was different for the different comparison groups. While the students identified as gifted and learning disabled were in special programs, the average achieving were selected from regular classes of a more heterogeneous composition. Furthermore, the gifted in most of the studies were identified by their high IQ only, and thus tended to include both achieving and underachieving gifted students. As well, differences in instruments were found in the measurement of a specific construct which made it difficult to compare different studies purporting to measure the same construct. For example self-concept could be measured by Harter's Perceived Competence Scale for Children (Harter, 1982) or Piers-Harris Self-Concept Scale (Piers, 1969).

Also it seems that even the format for the instruments used to measure affect may influence the results. Harter (1982) has noted that affective measures that use true-false, or like me-unlike me as response format are affected by "social desirability responding" which reduces the validity of some of these measures (see Ericsson, & Simon, 1980; Nisbitt & Bellows, 1977). Also it has been noted that sometimes the questions in many affective instruments confused children. In the studies conducted by Bladow (1982) using Norwicki-Strickland's locus of Control Scale, it was noted that most children had trouble understanding the questions, and this was particularly so with the learning disabled.

Perhaps another way of reviewing and clarifying the confusion among conflicting results in the literature on the developmental and individual differences in learners' perceptions is to go beyond construct labels to analyze what these constructs are composed of. It was noted that some the affective constructs emphasize *beliefs*, while others concern themselves with *reflections*, and/or *valuing* processes used by students. Perceived competence appeared to involve more *reflection* while locus of control may be more associated with *beliefs*, and self-esteem with *values*.

More careful analysis of children's perceptions reveals an awareness or a metacognitive component (i.e., reflection with respect to the self) (see Yussen, 1985). However this reflective aspect of affect tends to remain implicit in many of the affective constructs examined (i.e., locus of control, self-esteem, and perceived competence). Moreover these affective constructs tend to be studied in isolation, which makes it difficult to see how they may be integrated within an individual. Since possible developmental and individual differences have been referred to in many studies, perhaps, one fruitful way of understanding the developmental and individual differences in children's affect would naturally be to explore the interfaces between these areas of affect, with a view to integrating the different domains within a larger context of individual performance.

Meichenbaum (1977) and Yussen (1985) in fact have identified metacognition or self-reflection as a component of affect. It is thus possible that the interfaces between the affective variables are indeed metacognition when the different constructs are viewed within the larger context of motivation. This view would be a notion of motivation with a cognitive emphasis that defines the relationship between self-perceptions in different domains with respect to the self as well as in the individual's performance in a specific content area such as in reading. This larger model of motivation is necessary because recent studies are indicating that there is no sharp division between the affective and cognitive domains. How may a cognitive model of motivation help to integrate different aspects of children's school-related perceptions?

G. Possible relationships between affective and metacognitive perceptions

Over the years of Psychology's growth as a discipline, a number of models of motivation have been proposed (see Ames & Ames, 1989). A possible relationship between cognition and motivation has been addressed in many of these models. Examples are Bandura's (1977) and Schunk's (1989) self-efficacy, and Meichenbaum's (1977) cognitive behaviour modification (see Ames & Ames, 1989, introduction). These models vary with respect to their relationship with cognitive processes but the role of cognition in motivation often remained implicit. With the publication of *Research on Motivation in Education, Vol 3 Goals and Cognitions*, edited by Carol and Russell Ames (1989) a more formal recognition of a cognitive model of motivation seems in sight. "Throughout the volume, motivation is viewed as a goal-directed behaviour that involves different ways of thinking (and) focus on goals, cognitions, and moment-to-moment thoughts of students as they relate to motivation" (Ames & Ames, 1989, pp. 2-3).

In this cognitive notion of motivation (see Ames & Ames, 1989), the raising of learners' awareness and active involvement in the learning process is of central concern. The instructional focus is encouraging learners to take responsibility for their own learning and cognitive development. Part of the motivational issue as cognitively conceived centres around the question of how we can

> teach children to use their prior knowledge to choose efficiently among strategies, to monitor performance and to deal constructively with the invariable frustrations and failures that are inherent in the learning process? (Meichenbaum, 1986, p. 25).

In posing this question, Meichenbaum called attention to self-regulation as a possible mediator of motivation.

One affective research tradition which has shed light on the relationship between cognition and motivation is learned helplessness research, with its emphasis on the taking of responsibility for successes and failures as well as the selection of achievement-oriented goals (Diener & Dweck,1980; Dweck & Licht, 1980; Fincham & Cain, 1986; Licht & Dweck, 1984; Schunk, 1989; Seligman, 1975).

Collectively this research tradition reveals that objective non-contingency leads to perceived non-contingency, which defines attribution for future non-contingency. In turn negative attributions lead to behaviour deficits manifested in learned helplessness (see

Fincham & Cain, 1986 for more details). A more practical explanation of this generalized model of learned helplessness will be necessary for understanding the relationship among different areas of children's self-perceptions. Consider the LD situation. When failure experiences increase, and are communicated to the LD by significant others, especially in events they value (Schunk, 1989), the learning disabled are said to experience an objective non-contingent situation. The LD accordingly tend to perceive the event as non-contingent. This low expectation and perception of competence leads them to perceive future efforts as futile (future non-contingency), and not worth the effort to initiate or persist in the face of difficulties (behaviour deficits).

Dweck and her colleagues have shed more light on the debilitating condition of learned helplessness in which many LD students find themselves (Dweck & Goetz, 1978; Dweck & Licht, 1980; Dweck & Wortman, 1982; Licht & Dweck, 1984; Diener & Dweck, 1978; Dweck, 1975). In their initial study upon which future models are based, Dweck and Repucci (1973) used the IAR (Crandall, Katkovsky & Crandall, 1965) to study the academic locus of control of learned helpless versus motivation oriented children. The motivated children tended to attribute both success and failure to effort rather than external causes, whereas, learned helplessness children evidenced the opposite condition. In contrast, no differences were found between the groups with respect to preference for ability attributions over external causes. Other researchers using the IAR within the learned helplessness tradition have replicated the above findings (see previous review of the empirical studies on locus of control differences among the learning disabled, average achieving and gifted in the literature review).

Interestingly, it has also been noted that when the learned helpless children were trained to attribute their failure to solve math problems to lack of effort, their performance ceased to deteriorate, when they again encountered failure (Dweck, 1975). Fincham and Cain (1986) reminded us that "in all cases learned helpless and motivated children performed equally well prior to failure experiences - Licht and Dweck, 1984" (Fincham & Cain, 1986, p. 304). That is, we must look for explanation of deficit behaviour not in present performance but in one's history of reinforcement or non-contingent situations.

Some of the training regimes that have produced results in changing the learning disabled's negative attributions incorporate training in self-regulation in which metacognition plays a prominent part (Meichenbaum, 1977, 1986). "Self-regulation refers to the learner motivating his or her thinking and actions through language mediation" (Bos & Vaughn, 1988, p. 27). It incorporates notions of the mediational influence of language in the learning process (Luria, 1961; Schubert, 1983; Vygotsky, 1962, 1978). Through cognitive modelling (Meichenbaum, 1977; 1986), schemata and appropriate behaviours are adopted by children to regulate their behaviour. First, children use language to mediate their actions by overtly engaging in self-instruction, self-talk, and self-monitoring (Meichenbaum, 1986). But later, when the appropriate social-cognitive schemata become internalized, the language mediation process becomes covert, what may be called verbal thought

(Vygotsky, 1962) or verbal regulation of behaviour (Schubert, 1983) or cognitive modelling (Meichenbaum, 1977).

Since some LD adolescents have been shown to exhibit executive function or metacognitive deficits (Warner, Schumaker, Alley & Deshler, 1980; Meichenbaum, 1977), many educators have suggested training in self-regulation. Metacognition concerns what a person knows about his or her cognitions (Lawson, 1984; Kirby, 1984). It involves sub-processes such as "analyzing the problem at hand; reflecting upon what one knows or does not know that may be necessary for a solution; devising a plan for attacking the problem; and checking or monitoring progress" (Meichenbaum, 1986, p. 25; Brown, 1978).

The concept of metacognition has been studied in memory (Chi, 1978), attention (Miller & Bigi, 1978), reading comprehension (Kirby 1984, 1987; Myers & Paris, 1978; Paris & Oka, 1986). These studies reveal patterns for poor readers, many of which could be referred to as learning disabled. These children do not spontaneously engage in metacognitive activities related to reading and are less efficient in adjusting their goals to the reading task than the normal achieving (Paris & Oka, 1986). For example, they do not underline properly or reread difficult sentences, or use memory aids efficiently (Brown, 1980; Meichenbaum, 1986; Markman, 1979). This same metacognitive deficit is exhibited in other content areas such as mathematics in which deficits in the monitoring of computational steps, rereading of story problems before attempting to solve the problem, and checking answers for accuracy, are manifested. However, few authors associate metacognition with affective perceptions (see Yussen, 1985), whereas detailed analysis is likely to reveal that children's self-perceptions involve a reflective component akin to metacognition (see Paris & Lindaeur, 1982). It may be a useful heuristic to view all aspects of children's self-perceptions as awareness of self or metacognition in different domains of functioning. This premise, presently speculative, was adopted to unite the perceptions studied in the present study (i.e., perceived competence, locus of control, self-esteem, and metacognitive reading awareness).

What extant empirical evidence exists indicating a relationship between academic achievement and children's self-perceptions? Different areas of affective perceptions and metacognition have been found to be positively associated with achievement. In affective perceptions the areas such as self-concept (Hansford & Hattie, 1982), self-esteem (Purkey 1970; Simon, 1975), perceived competence (Harter, 1982) and academic locus of control (Crandall, Katkovsky, & Crandall, 1965) are often mentioned. Also in students' metacognitive development, metacognitive reading awareness (Paris & Lindaeur, 1982; Paris & Oka, 1986) has been associated with reading achievement.

When Harter (1982, p. 92) correlated scores on the Iowa Test of Basic Skills with cognitive perception of competence for grades 3 to 9, significant correlations ranging from .27 to .54 were obtained (i.e., .27, .40, .45, .54, .29, .44, and .54 for grades 3 through 9 respectively). However, Harter did not report the correlations for the other subtests of Perceived Competence Scale (i.e., Social, Physical, and General).

Relating the Iowa Test of Basic Skills and report cards with academic locus of control as measured by the IAR, Crandall, Katkovsky, and Crandall (1965) found that for grades 3, 4, and 5, total IAR score correlations ranged from .34 to .53 with all coefficients being significant. With the California Achievement Test however low correlations for grades 6, 8, 10, and 12 were obtained. However, Crandall, Katkovsky, and Crandall (1965) found significant correlations in the .20 and .30 range between total IAR and report cards for all these upper grades (i.e., Grades 6, 8, and 10). Crandall was not sure why a difference in correlations between lower and upper grades might exist: "whether this difference in prediction is a function of the differences between the instruments (Iowa Test of Basic Skills and that of California Achievement Test) or age of the subjects is unknown " (p. 107).

Patten (1983) correlated Coopersmith (1981) Self-esteem Inventory with Peabody Individual Achievement Test using a sample of 88 K-6 LD children placed in the regular classroom, but receiving resource room aid. For the total population, Pearson's r yielded correlations of .27, .41, and .43 for mathematics, reading, and general information respectively. Both reading and general information were significantly related to self-esteem.

Marsh, Cairns, Barnes, and Debus (1984) studied 248 fifth graders in regular classes and correlated their academic self-concept with reading and mathematics. Reading achievement correlated .31 (significantly) with reading self-perception, but not with general self-concept ($r=.19$) and not with self-concept in mathematics and 4 other non-academic areas. All other school-related self-concepts correlated significantly among themselves.

Paris and Oka (1986) studied the relationship between reading achievement (comprehension) and cognitive and social self-perceptions (both of which are subscales of Harter's, 1982, Perceived Competence Scale for Children) among 800 third and 800 fifth graders. Reading achievement was measured by Gates-MacGinitie Test (MacGinitie, 1978). The results were presented with and without IQ partialled out (see Table 1).

Table 1

Correlation between reading and affective self-perceptions

Measure	With IQ		IQ Partialled Out	
	Gr. 3	Gr. 5	Gr. 3	Gr. 5
Reading Awareness	.41**	.33**	.21**	.07
Reading Self-Perceptions	.42**	.51**	.22**	.21**
Cognitive Self-Perceptions	.31**	.41**	.12*	.15**
Social Self-Perceptions	.17**	.05	.02	-.02

* <.05, ** <.01

The results indicated that reading and affective self-perceptions are related partly because of a common underlying ability (IQ), as well as test-specific elements for grade 3 metacognitive reading awareness, and grades 3 and 5 reading self-perception, and cognitive self-perceptions.

Coopersmith (1959) correlated self-esteem and academic achievement among 102 fifth and 6th graders attending public schools, using Iowa Achievement Test and Rogers and Daymond Scale (Self-esteem Inventory). Significant correlations were obtained between self-esteem and total achievement with the two grades combined ($r=.36$, $p<.01$).

Byrne (1984) conducted an extensive meta-analysis of the construct validity of the self-concept construct. One aspect of Byrne's (1984) study was to examine the relationship between self-concept (both general and academic) as measured by different self-concept instruments, and academic achievement. In conclusion she noted that, "this review of correlational and experimental studies has revealed a positive correlation between (specific) self-concept and academic achievement across a variety of populations" p. 450).

The pervasiveness of this positive relationship between affective perceptions and academic achievement has been expressed in various ways. Margalit and Zak (1984) noted:

> The reciprocal relation between self-concept and academic achievement has been found in different cultures and age groups. A positive relation between two constructs has been demonstrated in normal children as early as kindergarten, continues through the elementary school years and persist even at the secondary school and college level (see for example, Scheirer & Kraut 1979). Some studies have demonstrated similar results for the learning disabled children as well (Smith 1979; Yauman, 1980) (p. 537).

Chapman (1988, p. 347) has also noted that

> Beliefs about the role of self-concept in learning are supported by studies that have investigated the relationship between self-concept and school achievement (see review by

> Beane & Lipka, 1984; Burns, 1983; Byrne, 1984; Purkey, 1970; Wylie, 1979). In general, there appears to be a moderate relationship between self-concept and measures of achievement, with correlations increasing where specific school related self-concepts are examined (Burns, 1983; Byrne, 1984) (p. 347).

Indeed very few studies have been reported which found no relationship between affective perceptions and academic achievement(e.g., Butcher,1968; Levinton & Kiraly,1975; and Williams,1973), but all with respect to general self-concept (see Byrne, 1984 for a comprehensive review).

In summary of the overall literature review, it appears then that some developmental and individual differences in perceived competence, locus of control, self-esteem and metacognition may exist. However, the extent of the conflicting results in the literature calls for further detailed studies. It became clear in the review that different instruments varying in their specificity to academic work, some general and others specific, were used to measure the same construct such as self-concept and locus of control. For example, Rosenberg and Simmons' (1973) Self-Esteem Scale, Coopersmith's (1981) Self-Esteem Inventory, Piers-Harris Self-Concept Scale (Piers, 1969) and Perceived Competence Scale (Harter, 1982) were used to measure self-concept. For locus of control, The Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965), an academic locus of control instrument and Nowicki and Strickland Locus of Control (Nowicki & Strickland, 1973) a general instrument were often used. One would think that those affective instruments specific to academic content would be more delineating of the learning disabled, average achieving and the gifted (see Chapman, 1988). Apart from the issue of distinguishing children's self-perceptions to respect with academic and non-academic domains, it was inferred from the review that a lack of clearly delineated comparison groups may be a major factor in the existence of conflicting research results in the affective literature.

The review leads to the hypothesis that clearly delineated groups of children based on cognitive ability and differences in reading comprehension will exhibit patterns of affect and self-regulation (metacognitive reading awareness), which may influence their achievement. For example, it is likely that an initial high ability and achievement would encourage individuals to perceive themselves as more competent and to experience a high feeling of self-esteem and a subsequent feeling of being in control. This would be particularly evident from grade 3 upward (Harter, 1982), where differentiation in children's self-perceptions have been found.

That is, the positive self-concept developed as a result of initial high abilities and achievements would lead children to perceive themselves to be in control, and to accept more responsibility for both failure and success experiences. The role played by significant others (teachers, parents and peers) through reinforcing behaviours and social cues communicated to learners have often been referred to in the literature (Dweck, 1986; Fincham & Cain, 1986; Schunk, 1989).

Similarly, children of low cognitive abilities and achievement will perceive their competence and esteem to be low as they experience non-reinforcement from significant others because of repeated failures. As these low achieving students develop a low self-concept they would be led to believe events to be out of their control and be unable to accept responsibility for successes when they succeed.

Both grade and individual differences would be manifested in perception of competence, locus of control, self-esteem and metacognitive reading awareness because of the variation in initial abilities, and achievement among learners as well as differences in individuals' histories of successes and failures that would initiate patterns of achievement-oriented behaviours (Schunk, 1989), some positive, as in the case of the gifted, and others negative as in the learning disabled situation.

Based on these insights, a study described in succeeding chapters was conducted to examine individual and developmental differences in children's affective characteristics and in metacognitive awareness in reading at grade 4 and 7 levels

III: METHOD

A. Context of the study

The present study, which examined developmental and individual differences, was conducted in the context of a larger long-term study, i.e., the Cognitive Education Project (Mulcahy, et al., 1989). This project, which was based in Edmonton, and began officially in 1984, was concerned with the experimental evaluation of two learning and thinking programs in the upper elementary and junior high (i.e., Grade 4 and 7). The project was the result of the joint effort of the Faculty of Education - University of Alberta, the Department of Education (Province of Alberta), and several school districts in North and Central Alberta (see Mulcahy et al., 1989).

B. Subjects

Subjects were screened from an initial pool of 4000 students from regular classes in North and Central Alberta. All students were administered Canadian Cognitive Abilities Test, Canadian Achievement Test. As well, all students were rated by their teachers on three subscales of Renzulli Behaviour Rating Scale (i.e., learning, motivation and creativity). Grade 4 and 7 students totalling 450 and 350 respectively were involved in this study. However, the number of cases used in the computation differed from measure to measure owing to missing data, but within a given measure, the number of subjects was the same for the subtests (see Tables 2A and 2B, Appendix A).

C. Criteria of identification of diagnostic groups

Children in the study were selected according to a limited set of criteria which differed for the learning disabled, the average achiever and the gifted, in order to ensure that these groups were significantly different. Review of literature on identification procedures showed that the criteria of identification of the learning disabled, the average achieving and the gifted were not uniform across studies and controversy about cut-offs for the differing sub-groups existed (Berdine & Blackhurst, 1985). The identification of the gifted, the learning disabled, and average achievers in the present study was generally based on norm-referenced and criterion-referenced tests of cognitive abilities, and achievement, and specific behaviours usually associated with the gifted. That is, the perceptions of teachers concerning the behavioural characteristics of gifted students in the study were used as supplemental criteria to identify the gifted (Ericsson & Simon, 1980; Nisbitt & Wilson, 1977). Subjects who had been earlier screened were identified at grade 4 and 7 levels from a total population of 4,000. The details of the cut-off points on the different scales are summarized in Table 3 (see Appendix A).

The average achiever

The average achieving obtained scores within one standard deviation of the mean on both the verbal and nonverbal sub-scales of the Canadian Cognitive Abilities Test (CCAT), and achievement scores within approximately one standard deviation of the mean on the reading and mathematics subscales of the Canadian Achievement Test (CAT).

The learning disabled

For the learning disabled, they were within one standard deviation on both the verbal and nonverbal subscales of the Canadian Cognitive Abilities Test; and also obtained achievement scores approximately one grade or more below grade level on the reading subscale of the Canadian Achievement Test. Grade 4 learning disabled students were below the 3.4 grade level and grade 7 learning disabled below the 5.4 grade level in reading comprehension.

Though the literature did not present an agreed-upon definition or method of defining learning disabled student, it was generally held that at least two major criteria must exist before one is labelled learning disabled. These were average intellectual ability and poor academic achievement in one or more areas in the basics (e.g., reading and mathematics). However, the degree of discrepancy between expected and actual academic achievement required for identification of the learning disabled remained an open question. Learning disabled children from regular classrooms who were in some cases receiving resource room help were selected. These children were the 11% of the total sample who displayed the greatest discrepancy between intellectual ability and achievement in reading comprehension and vocabulary. That is, poor academic achievement in reading was emphasized and used as basis for selecting the learning disabled, but only those children who were mildly affected were selected to be included in the learning disabled sample. The very severe cases of learning disability were not included in the study as they were usually found in self-contained classes. The rationale for emphasizing reading was that it forms a central focus for many school activities, and the problems experienced in reading seems to affect a larger proportion of the learning disabled children than do other content areas (Bos & Vaughn, 1988).

The gifted

Several identification criteria for the gifted exist in the gifted literature (e.g., Renzulli, et al., 1976; Mulcahy, et al., 1989). However, in the present study three criteria were used in the selection of the gifted. Students who scored one or more standard deviations above the mean on the verbal and non-verbal sub-scales of the Canadian Cognitive Abilities Test (CCAT), and performed above average in reading achievement, and as well, were rated by their teachers to be at or above grade level in mathematics on the Canadian Achievement Test were selected. Grade 4 gifted subjects were above 6.0 grade level and grade 7 gifted were above 9.5 grade level in reading comprehension. The third supplemental criterion for selecting the gifted was that they be rated above the mean (of the total study population) on all three subscales of the Renzulli, et al., (1976) Scales for the Rating of Behavioural Characteristics of Superior Students (i.e., Motivation, Learning, and Creativity). In other words, for the gifted, general intellectual ability, specific academic achievement, and teacher ratings of student characteristics were used in the identification.

The cut-off of approximately 115 on both Verbal and Non-verbal subtests of CCAT is low but it ensured that none of the potentially gifted students was left out. Moreover, researchers have found that children who obtain scores of 115 to 120 on cognitive ability measures such as the subscales of CCAT obtain significantly higher scores when retested on individual intelligence tests such as WISC-R, or Binet (Berk, 1984; Salvia & Ysseldyke, 1985). The use of these three criteria ensured that gifted students who were exceptional in very limited areas but had serious problems in other relevant areas were not included in the gifted sample. That is, the underachieving gifted students were not studied here.

D. Canadian Achievement Test (CAT)

Reading vocabulary, reading comprehension, mathematics computation, and mathematics problem solving subtests of the Canadian Achievement Test (CAT: 1983) were chosen to measure students' achievement in reading and mathematics.

Though raw scores, norm-referenced scores (percentile ranks, stanines, grade equivalents, and scale scores), and criterion referenced scores have been reported in the technical manual, only the standard scores were used to ensure that the performance of grade 4 and 7 students were comparable. In the development of the Canadian Achievement Test, an initial item pool derived from the California Achievement Test was reviewed to reflect current Canadian educational objectives, and as well, over one thousand items were tried out, reviewed and adopted with a total of 4,198 students tested during item tryouts. This made CAT highly relevant to the Canadian context.

CAT was also normed on 76,000 Canadian children of different backgrounds from grades 1-12, to ensure that the composition of the normative sample reflected the composition of the larger Canadian population. Internal consistency coefficients (KR-20) ranged from .51 to .70, and test-retest reliabilities ranged between .80 and .97 for the subtests selected for the study, which made the psychometric properties of the test acceptable. Thus CAT appeared suitable as a standardized measure of group achievement (within the Canadian context) for the study.

E. Canadian Cognitive Abilities Test (CCAT)

From the multilevel edition of the Canadian Cognitive Abilities Test (CCAT: 1984), at the appropriate ability levels was administered to all subjects to provide scores for children's verbal, quantitative and nonverbal abilities. Though several scores were available for each battery and norms were presented by grade and age, for Fall, Winter, and Spring, only the standardized scores were used to make comparisons across ability and diagnostic groups possible.

CCAT was found suitable as a measure of group abilities within the Canadian context because it was normed in 10 provinces in Canada, within 137 school districts involving 30,000 school children. As well, it was found to possess adequate technical characteristics. The standardization study for the Level B version was based on a sample of 2,627 children. Reliability expressed as KR-20 for grade 4 were .93 for verbal, .92 for nonverbal, and .89 for quantitative reasoning and .92, .89, .90 for verbal, nonverbal, quantitative, respectively for Grade 7. Test-retest reliabilities were not reported in the technical manual. As well none of the existing tests showed comparable test characteristics within the Canadian context. CCAT was thus found to be suitable for the present study.

F. Harter's Perceived Competence Scale

Harter's (1982) Perceived Competence Scale was used to measure student's self-perceptions of their competence in the cognitive, social, physical and general domains. The cognitive subscale measures children's views of their academic abilities, the Social subscale measures children's views of their social skills and popularity, the physical subscale measures children's views of their physical abilities related to sports, etc., and the general subscale measures children's views of self which is a measure of general self concept. The basis of Harter's Perceived Competence Scale is White's (1959) concept of "effectance motivation" which defines students' perception of their academic competence. According to White (1959), achievement motivation is believed to impel the child to engage in mastery activities which influence future performance.

To elicit appropriate student responses, the test provides brief descriptions of two types of children with which students may compare themselves: "Some kids feel that they are good at their school work BUT other kids worry about whether they can do the work assigned to them." These contrasting descriptions were presented to students as being equally likely. The children were first instructed to pick the child which was most like them and then to decide whether the statement was either "really true" or "sort of true" for them. The score ranged between 1 and 4 for each of the items, with a high score representing high perceived competence. A total score was derived for each of the four subscales and this was divided by the number of items (i.e., 7) to arrive at a mean subscale score.

The Harter Scale (1982) was chosen because of its good construct validity and reliability. It is also appropriate for the complete age range involved in the study (i.e., upper elementary and junior high). The factor structures obtained with subjects aged 8 to 12 (N=341) clearly specified four factors corresponding to the four subscales. This has been further replicated in additional studies involving 4 different samples (Harter, 1982). Factorial validity was verified using a New York sample of 810 students in which the average loadings of items on cognitive, social, physical, and general factors (sub-scales) were .67, .61, .64, and .50 respectively. Convergent validity with pupil and teacher ratings in the cognitive domain demonstrated a developmental trend. Correlations between teacher and student rating for third, fourth, fifth, sixth, seventh, eighth, and ninth grades were reported to be .28, .32, .50, .31, .66, and .73 respectively. Baarstad (1978) in a study with learning disabled children reported a significant discriminant validity with respect to cognitive perception of competence when learning disabled students were compared to regular children. Harter has also reported reliability scores (KR-20 internal consistency) of .76, .78, .83 and .73 for the Cognitive, Social, Physical, and General subscales respectively. Test-retest reliability on 208 Colorado pupils after three months, and a sample of 810 pupils from New York after nine months was reported to be .78, .80, .87, and .70 for Colorado and .78, .75, .80, and .69 for New York for the respective subscales. Thus the Harter (1982) Perceived Competence Scale was found suitable for the present study.

G. The Scales for Rating the Behavioral Characteristics of Superior Students (The SRBCSS)

The subscales of learning, motivation and creativity of the Scales for Rating the Behavioral Characteristics of Superior Students (Renzulli, Smith, White, Callahan & Hartman, 1976), were used as measures of teachers' perceptions of the behaviours of students on task. The test was originally designed to provide a relatively objective and systematic instrument to assist teachers in identifying gifted students (Renzulli, Smith, White, Callahan & Hartman, 1976).

Teachers completed the questionnaire by rating their students on a four-point Likert Scale (1 being seldom or never, and 4 being almost always observed). Inter rater reliabilities for fifth and sixth grade students taken twice within a 3-month interval ranged from a low of .67 (Leadership Scale) to a high of .91 (Creativity Scale), and test-retest reliability coefficients ranged from .77 (Leadership Scale) to .91 (Motivation Scale). Scores on the learning and motivation scales correlated positively with standardized group intelligence and achievement tests, with the figures ranging from .36 for the motivation scale and intelligence, to .61 for the learning scale and intelligence. Thus the SRBCSS was deemed to have adequate psychometric properties suitable for the present study.

H. Coopersmith's Self Esteem Inventories

The Coopersmith's Self Esteem Inventory (Coopersmith, 1981) was designed to measure students' evaluative attitudes toward the self in social, school, home, general and total activity areas. Self-esteem is believed to be significantly associated with personal satisfaction and effective functioning. Coopersmith's (1981) inventory was chosen because of its relationship with the Harter Scale (Harter, 1982).

The validity of the total score is relatively high. As Peterson (1985) indicates in the Burros Mental Measurement Yearbook (Ninth Edition), the Coopersmith scores "are reliable and stable and there exists an impressive amount of data bearing on their construct validity" (p. 398). In an internal consistency study, including students of all socio-economic ranges, Kimball (1972) obtained Kuder-Richardson reliability estimates (KR-20) of .92 and .89 for grade 4 and 7 respectively, for the total self-esteem score. Subscale intercorrelations calculated by Donaldson (1974) ranged from .02 to .52. The inventory used for this study was the school form, which is generally used with students aged 8 through 15 and consists of 58 items. The self-esteem items yield a total score and five separate subscale scores, (i.e., General Self, Social Self-Peers, Home-Parents, School-Academic, and Lie).

Negative items were scored correct (for example, "I get upset easily at home"), if they were answered "Unlike me." Positive items were scored correct (for example, "I'm pretty sure of myself"), if they have been answered "like me". The total self score, which is the sum of the number of correctly answered items (excluding those items used for the detection of lies), was multiplied by two, resulting in a maximum possible total self score of 100.

For the present study, the 5 major subscales of the Coopersmith Inventory were used in the analysis of individual differences in self-esteem.

I. Locus of Control: Crandall's Intellectual Achievement Responsibility Questionnaire (IAR)

The Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky, & Crandall, 1965) is a measure of general locus of control concerning the extent to which children attribute events in their lives to themselves as opposed to external forces. It is believed to be an appropriate measure of locus of control beliefs of children in the relatively specific area of intellectual-academic achievement (Phares, 1976). The test itself consists of 34 items of which the subject checks one of two answers indicating either an internal locus of control or an external locus of control (e.g., if you solve a puzzle quickly, is it (a) because you worked on it carefully, or (b) because it wasn't a very hard puzzle?). The response from each subject was scored for total number of internal responses to arrive at a degree of internal locus of control score. This was then used in all statistical analysis. Three subscales of this measure were used in the present study, i.e., total internal locus, and locus associated with taking responsibility for failure experiences (negative internality), and taking responsibility for success experiences (positive internality).

In terms of convergent validity a moderately high correlation has been found between this measure and report card grades ($r = 0.54 - 0.58$) (Crandall, Katkovsky, & Crandall, 1965). The IAR scores are positively and significantly related to reading, language, and mathematics sub-scores and total achievement-test scores as well as report cards in the elementary grades ($r=.34$ to .53). The IAR has been extensively used in research related to achievement and academic performance.

Test-retest reliability of the IAR was reported by Wolk and Eliot (1974) to be .55 for internal (success) positive, .60 for internal (failure) negative and .62 for total internal scores. Similarly, Crandall, Katkovsky, and Crandall (1965) reported that the test-retest reliability was .66 for internal positive, .74 for internal negative and .69 for total internal scores on the IAR after two-month interval. These correlations were all significant at the $p<.001$ level. Seventy ninth-grade subjects were similarly tested and reliability coefficients of .47 for internal positive, .69 for internal negative, and .65 for total internal scores were significant at the $p<.001$ level. Crandall, Katkovsky, and Crandall (1965) used a sample of 923 elementary and high-school students in their study. These children came from five different schools and had different backgrounds. Split-half reliabilities of .54 (internal success) and .57 (internal failure) for the IAR were obtained from a random sample of elementary students. A similar random sample with older children revealed split-hald reliability of .60 for both internal success and internal failure scores.

J. The Index of Reading Awareness (IRA)

The Index of Reading Awareness (IRA) (Paris & Jacobs, 1984) was used to measure children's metacognitive reading awareness with respect to the evaluation, planning, and self-regulation skills involved in reading, as well as "conditional strategies" used to reach specific goals (e.g. writing a book report). The overall index of reading awareness, according to Paris, measures many different facets of reading, including evaluation of one's self and the task, planning ahead, monitoring one's own progress, and the use of strategies to reach specific goals (i.e., conditional knowledge).

In the administration of the test, items were read to children together with choice of responses, and students were asked to check off their responses on standard response sheets. Individual scores were summed up to arrive at a reading strategy awareness index with a possible maximum score of 44. A sample multiple-choice item took the form, *What is the hardest part about reading for you*? with the alternative responses being (a) Sounding out hard words (1 point) (b) When you don't understand the story (2 points), (c) Nothing is hard about reading for you. (0 point). Each question was accompanied by three choices of answers, scored 0, 1, 2 points as above. The order of alternative responses from which children could select was random, but always responses in the 0 category were considered inappropriate. Responses scored 1 were adequate responses based on decoding, or external features of the text, or vague references to affective or cognitive ideas, but include no mention of a specific strategy. Choices receiving 2 points were good responses in that they were considered evaluative, and planful, or an index of awareness of the goals and strategies in reading. Paris and Jacobs (1984) obtained significant differences in this particular measure for good and poor readers as well as differences in experimental groups relative to reading strategy instruction versus control groups. Paris and Jacobs also found test-retest reliability of r=.55, p<.001, for a group of 544 elementary school 3rd and 5th grade children after an eight month interval. There were no floor or ceiling effects evident for either of the two grade levels. The test therefore has reasonable reliability and adequate ranges for grades 3 to 6.

K. Chapter summary

Students were identified as the learning disabled, average achieving, and gifted using specific criteria and cut-offs, based on differences in cognitive abilities, achievement in reading and behavioural characteristics. It was hypothesized that children clearly delineated on cognitive abilities and achievement will also be delineated with respect to the subscales of perceived competence, locus of control and self-esteem, as well as on their metacognitive reading awareness. Students were subsequently administered the 3 affective instruments referred to above and one measure of metacognition.

IV: RESULTS OF THE STUDY

A. Introduction

The interest in the developmental and individual differences in affect and awareness of reading strategies among learners focused on grades 4 and 7 learning disabled, average achieving, and gifted students. In order to determine whether developmental and individual differences existed among the groups studied with respect to their perception of competence, internal locus of control, self-esteem and metacognitive reading awareness, a series of ANOVAs, multiple range tests and correlations were conducted on students' self-perception scores as dependent variables. These ANOVA results are reported separately for perceived competence, locus of control, self-esteem, and metacognitive reading awareness. As well, the correlations among subtests of students' perceptions and standardized achievement scores are briefly reported. The means and standard deviations for perceived competence, locus of control, self-esteem, and metacognitive reading awareness are summarized in Tables 5 and 6. In Table 5 the means are collapsed over diagnostic categories, whereas in Table 6, they are presented separately for grade 4 and 7 learning disabled, average achieving and the gifted (see Appendix B for Table 5 and 6). The overall results are summarized in Table 35, Appendix H.

B. Perceived Competence

This dependent variable which comprised 4 subtests (i.e., cognitive, social, physical, and general) concern the evaluative statements students make about the self in relation to specific content areas, as to whether they perceive themselves to be competent or not. The ANOVA results are first presented separately for the subtests followed by a brief discussion. The ANOVA tables for the Perceived Competence Scale can be found in Appendix C.

Perception of Cognitive Competence

A 3(Group) by 2(Grade) ANOVA was conducted utilizing the raw scores for cognitive perception scale (Harter, 1982) as the dependent variable. Significant main effects for diagnostic group (F=64.40, <.001) and grade (F = 15.21, <.001) were obtained (see Table 7). The mean scores for grade 4 and 7, collapsed over diagnostic groups were 2.79, and 2.98 respectively (see Table 5, Appendix B). In order to further determine where diagnostic group differences were, Scheffe multiple comparisons of means were conducted (see Table, 8 Appendix C). The results indicated the strong trend that the learning disabled perceived their cognitive competence at a significantly lower level than the average achieving (F=2.94, <.06) and the average perceived their competence to be lower than the gifted (F=36.02, <.001).

The overall mean scores for the learning disabled, average achieving and the gifted collapsed over grade were 2.62, 2.77, and 3.27 respectively. Figure 1 indicates, that overall grade 4 students perceived their competence to be less than grade 7 but the difference is largely between the learning disabled and the gifted and between the average achieving and the gifted.

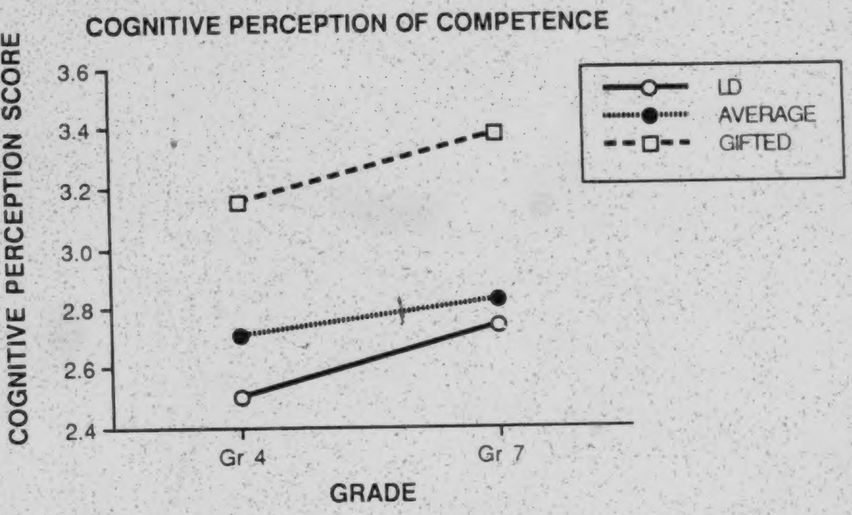
Table 5

Means and standard deviations for the subscales of perceived competence, locus of control, self-esteem, and metacognitive reading awareness by grades and by diagnostic categories

		Grade		Diagnostic Groups		
Variable		4	7	LD	AVE	GFT
Perceived Competence:						
Cognitive	M	2.73	2.98	2.62	2.77	3.27
	SD	.59	.54	.63	.57	.48
Social	M	2.79	2.91	2.83	2.83	2.91
	SD	.67	.65	.69	.62	.66
Physical	M	2.80	2.85	2.88	2.81	2.77
	SD	.67	.65	.69	.62	.66
General	M	2.88	2.93	2.83	2.84	3.05
	SD	.59	.63	.76	.64	.57
Self Esteem						
Social	M	5.30	5.11	4.67	4.99	5.96
	SD	1.78	1.79	1.88	1.76	1.71
Home	M	5.29	6.15	5.46	5.59	6.11
	SD	1.86	1.65	1.74	1.80	1.73
School	M	5.33	5.61	5.35	5.13	5.94
	SD	1.87	2.06	1.88	2.16	1.84
General	M	17.23	18.75	16.96	17.30	19.70
	SD	4.33	4.39	4.58	4.38	4.11
Total	M	66.14	71.29	64.80	66.12	75.21
	SD	16.46	15.75	16.31	16.26	15.74
Locus of Control						
Total Internal	M	24.33	25.25	23.85	25.40	25.12
	SD	4.30	4.49	4.32	4.27	4.60
Internal Failure	M	10.95	11.56	10.92	11.57	11.27
	SD	2.97	2.87	2.87	2.68	3.19
Internal Success	M	13.37	13.69	12.92	13.83	13.84
	SD	2.23	2.55	2.45	2.37	2.36
Metacognitive Reading Awareness						
	M	29.96	32.80	29.97	31.30	32.88
	SD	4.03	4.48	4.79	4.36	3.53

Figure 1

Perception of Competence (Cognitive): Grades 4 and 7 learning disabled, average achievers and gifted.



Social Perception of Competence

A 3(Group) by 2(Grade) ANOVA was conducted utilizing the raw scores for social perception scale (Harter, 1982) as the dependent variable. With respect to perception of social competence, there was no significant main effect for diagnostic group, but a significant grade main effect (F=4.78, <.03) was evident (see Table 9). Grade 7 students (M=2.91) demonstrated significantly higher social perception than grade 4 students (M=2.79). The means collapsed over grade for the learning disabled, average achievers and the gifted were 2.83, 2.83, 2.91 respectively.

Physical Perception of Competence

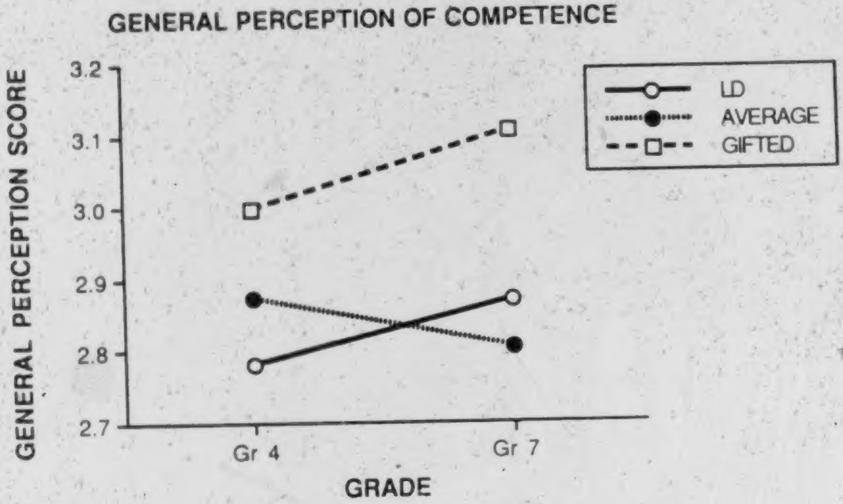
A 3(Group) by 2(Grade) ANOVA was conducted utilizing the raw scores for physical perception scale (Harter, 1982). With respect to perception of physical competence, no significant main effects were obtained for either diagnostic group or grade (see Table 10). The means collapsed over grade for the learning disabled, average achievers and the gifted were 2.88, 2.81 and 2.77 respectively. The means for grade 4 and 7 collapsed over diagnostic groups, were 2.80, and 2.85 respectively.

Perception of Competence (General)

3(Group) by 2(Grade) ANOVA was conducted utilizing the raw scores for cognitive perception scale (Harter, 1982). Significant main effects for diagnostic group (F=7.651, <.001) but not for grade (see Table 11) were evident with respect to perception of general competence. The means collapsed over grade for the learning disabled, average achievers and the gifted were 2.83, 2.84, 3.05 respectively. For grade 4 and 7 the means collapsed over diagnostic group were 2.88 and 2.93 respectively. Scheffe multiple comparisons of means (see Table 12) indicated that the learning disabled and the average were not different (F=0.022, <0.978) in their perception of general competence. However, the gifted performed significantly higher than the average (F=5.47, <.004), and the learning disabled (F=5.94, <.003). As Figure 2 shows, both the learning disabled and average were lower than the gifted at grade 4 and grade 7.

Figure 2

Perception of Competence (General): Grades 4 and 7 learning disabled, average achievers and gifted.



Discussion of Perception of Competence results

The perceived competence results reveal possible developmental differences (i.e., grade-related) particularly with respect to cognitive and social competence. Grade 7 students perceived themselves to be at significantly higher levels than grade 4 in both cognitive and social competence. This grade difference may reflect the influence of academic work and socialization on perception since general and physical subscales were less affected. Particularly, cognitive competence associated with academic subject matter and social perception, appear most likely to continue to develop at higher grades because of continued performance feedback from significant others. On the other hand, physical and general competence being less specific to academic work, may reach the upper limit of development earlier, so that no differences between grade 4 and 7 were likely.

Diagnostic group effects were obtained with respect to cognitive and general competence. In cognitive competence, the diagnostic group effect was due to significant differences among all three diagnostic groups. The learning disabled viewed themselves to be the least competent, the average achieving were significantly higher than the LD, and the gifted obtained the highest scores. However, with respect to general perception of competence, which is not as specific as cognitive perception of competence to academic content, the diagnostic group effect was due to a significant difference between the learning disabled and the gifted, and between the average achieving and the gifted. The LD and average achieving did not differ on general competence.

The present study supports extant research which indicates lower cognitive competence for the learning disabled compared to the non-handicapped (Bryan & Pearl, 1979; Chapman & Boersma, 1979; Rogers, 1983; Serafica & Harway, 1979). Some authors have noted that by adolescence, most learning disabled would have developed negative or poor self-concepts due to accumulating history of failure experiences (Alley & Deshler, 1979; Drake & Cavanaugh, 1979; Gordon, 1970; Russell, 1974). However, this decreasing developmental trend for the self-concept of the learning disabled was not supported in the present study. Nor was there lower competence perception for the learning disabled relative to the average achieving. Part of the reason for this finding in the present study may be the use of mild cases of learning disability for the LD sample for the study. Also, the group of learning disabled children used in the present study were not in special classes with few ever receiving remedial help in regular classes or resource rooms. Though these students were identified by the researcher as mildly disabled, since they were not officially identified, they are not labelled as such.

Boersma, Chapman and Maguire (1978) demonstrated through an empirical study using one specific and one general perception of competence scale, that it may be necessary to use more specific measures of self-concept such as Student's Perception of Competence Scale (Chapman & Boersma, 1979) in order to distinguish between the learning disabled and non-handicapped with respect to general self-concept. It is understandable that on Harter's Scale, only cognitive competence which is more specific to academic content distinguished among the 3 diagnostic groups. Thus the present study supports existing research that says that specific school-related perceptions are more likely to delineate the learning disabled from the non-LD, than general perceptions (Chapman, 1988). The present study adds that though the gifted differ from both the learning disabled and the average achieving in general perception, the learning disabled and average achieving did not differ among themselves on the same subscale. This might be because the mild LD sample used in the study performed at the same level as the average achieving on cognitive abilities (i.e., verbal, quantitative and nonverbal subtests) measured by the Canadian Cognitive Abilities Test; and that cognitive ability differences may be crucial in determining differences in perception of competence, locus of control, self-esteem and awareness of reading strategies.

Thus the aspect of Harter's (1982) Perception of Competence Scale for Children that clearly and unambiguously differentiated among the learning disabled, average achieving and gifted was cognitive perception of competence, a school-related scale in which the learning disabled was least and the gifted the most perceiving of their competence. Though some studies obtain lower perceived competence ratings for the gifted compared to the LD, results opposite to the present study (e.g., Karnes & Wherry, 1981; Loeb & Jay, 1987; Milgram & Milgram, 1976), these studies used mainly general self-concept scales such as Piers-Harris Self-Concept Scale and Tennessee Self-Concept Scale (see Chapman, 1988), and comparison groups that were not nearly as clearly delineated as was done in the present study.

C. Children's Self-Esteem

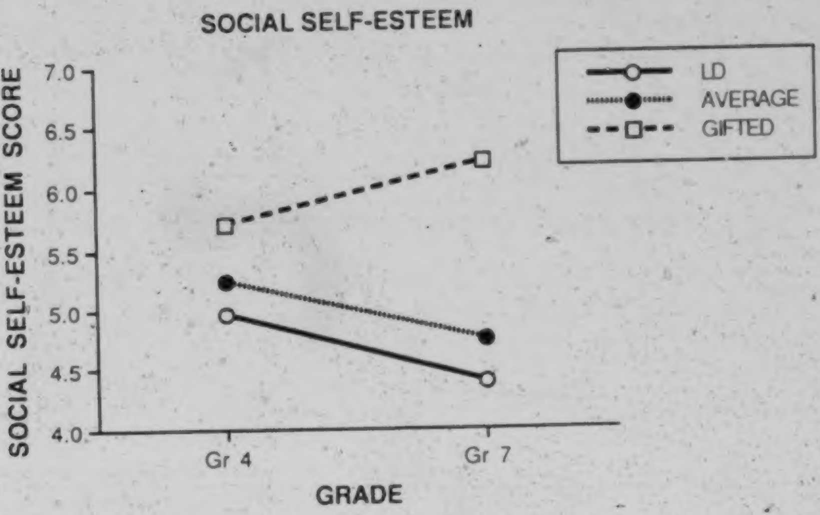
Students' self-esteem was evaluated using Coopersmith Self-Esteem Inventory (Coopersmith, 1981). Five areas were examined leading to five 2(Grade) by 3(Diagnostic Group) ANOVAs performed on students' Self-Esteem scores in the social, home, school, general, and, total domains, as dependent variables. The results for the 5 subscales of Coopersmith (1981) Scale are reported separately each with a brief discussion (see Appendix D for the ANOVA Tables) .

Self-Esteem (Social)

With respect to social self-estcem, there were significant main effects for diagnostic group (F=26.78, <.001) but not for grade (see Table 13). The means collapsed over grade for the learning disabled, average achieving and the gifted were 4.67, 4.99, 5.96 respectively. The means for grade 4 and 7 were 5.30, 5.11 respectively. The learning disabled and the average achieving did not differ significantly (Table 14). However, the gifted differed significantly from the learning disabled (F=24.93, <.001) and the average achieving (F=13.92, <.001). As Table 13 shows and illustrated by Figure 3, there was a significant interaction between grade and diagnostic groups (F=5.36, <.005). The interaction appeared due to an increase in social self-esteem for the gifted from grade 4 to 7, while there was a decrease for both the average and the learning disabled as a function of grade.

Figure 3

Self-Esteem (Social): Grades 4 and 7 learning disabled, average achievers and gifted.

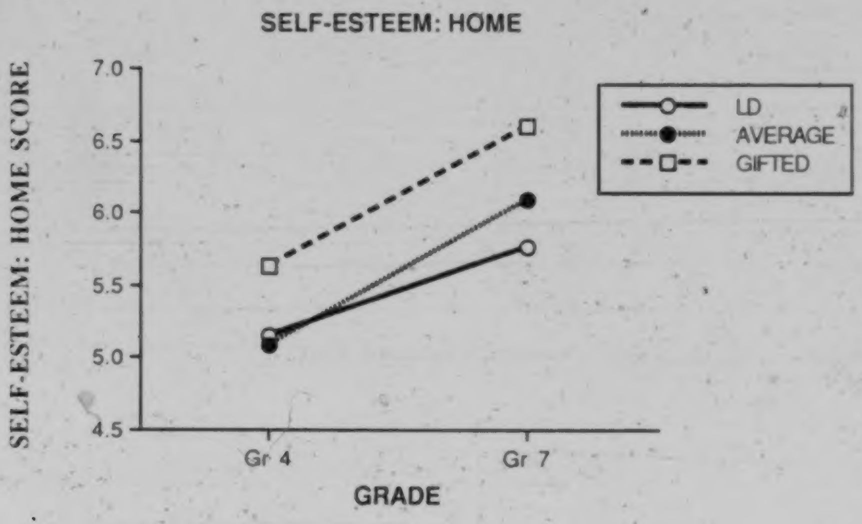


Self-Esteem (Home)

Significant main effects in self-esteem (home) were obtained for both diagnostic group (F =7.19, <.001) and grade (F=33.78, <.001) (see Table 15). The means collapsed over grade for the learning disabled, average achievers and the gifted were 5.46, 5.59, 6.11 respectively, and the means collapsed over diagnostic groups for grade 4 and 7 were 5.29 and 6.15 respectively. Scheffe multiple comparisons of means were performed (see Table 16) and indicated that the learning disabled did not significantly differ in home self-esteem from the average. However the gifted possessed a significantly higher home self-esteem than both the learning disabled (F=6.48, <.002) and the average achieving (F=4.12, <.017). Figure 4 displays the means of the groups.

Figure 4

Self-Esteem (Home): Grades 4 and 7 learning disabled, average achievers and gifted.



Self-Esteem (School)

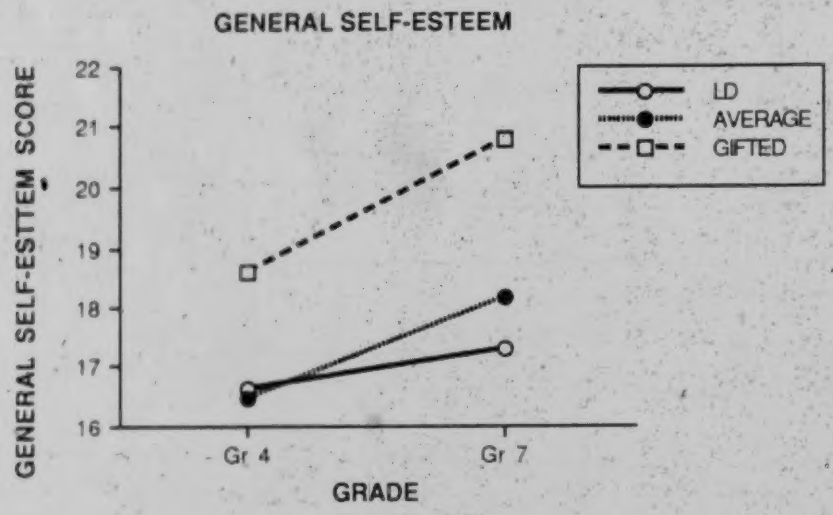
With respect to self-esteem (school), significant main effects for diagnostic group (F=8.50, <.001) but not for grade (F=2.94, <.087) were obtained (see Table 17). The means collapsed over grade for the learning disabled, average achievers and the gifted were 5.35, 5.13, 5.94 respectively and for grade 4 and 7 the means were 5.33, 5.61 respectively. Scheffe multiple comparisons of means conducted (see Table 18) indicated that the learning disabled were not significantly different compared to the average achieving on school self-esteem though the gifted possessed higher school self-esteem than both the average (F=7.97, <.001) and the learning disabled (F=4.30, <.014).

Self-Esteem (General)

With respect to self-esteem (general), significant main effects for both diagnostic group (F=21.79, <.001) and grade (F=17.21, <.001) were obtained (see Table 19) but no interactions. The means collapsed over grade for the learning disabled, average achieving and the gifted were 16.96, 17.30, 19.70 respectively, and for grade 4 and 7 the means collapsed over diagnostic groups were also 17.23, 18.75 respectively. When Scheffe multiple comparisons of means were conducted (see Table 20) the learning disabled did not differ from the average achieving with respect to general self-esteem. However, the gifted performed at a significantly higher level than the average (F=14.04, <.001) and the learning disabled (F=18.60, <.001). Figure 5 displays the group means.

Figure 5

Self-Esteem (General): Grades 4 and 7 learning disabled, average achievers and gifted.

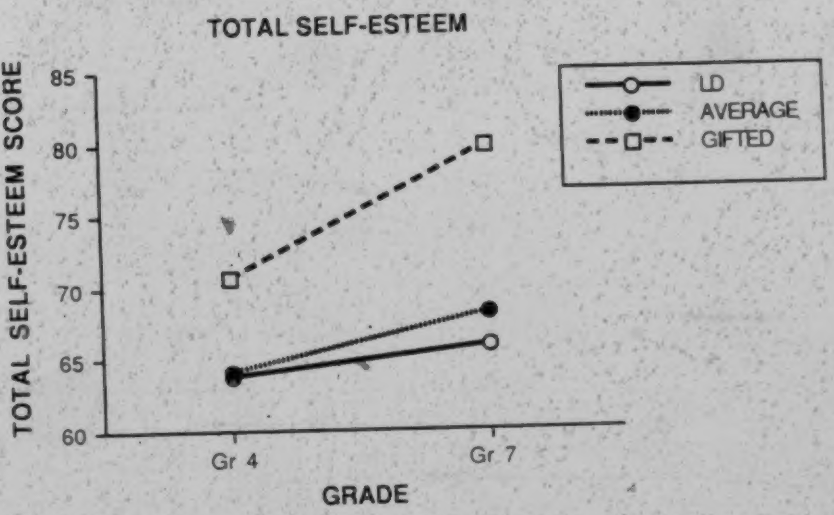


Self-Esteem (Total)

Significant main effects for diagnostic group (F=22.94, <.001) and grade (F=14.44, <.001) were obtained on total self-esteem (see Table 21) but no interaction was evident. The means collapsed over grade for the learning disabled, average achievers and the gifted were 64.80, 66.12, and 75.21 respectively. The means for grade 4 and 7 were 66.14, and 71.29 respectively. Scheffe multiple comparisons of means conducted to determine where diagnostic group differences were (see Table 22), indicated the learning disabled to function at the same level as the average achieving. The gifted however demonstrated significantly higher total self-esteem than the learning disabled (F=19.62, <.001) and the average achieving (F=14.74, <.001).

Figure 6

Self-Esteem (Total): Grades 4 and 7 learning disabled, average achievers and gifted.



Scheffe multiple comparisons of means with respect to total self-esteem indicated no significant differences between the learning disabled and the average achieving, but the gifted demonstrated significantly higher total self-esteem than the learning disabled (F=19.62, <.001) and the average achieving (F=14.74, <.001). As figure 6 shows the gifted were highest in total self-esteem while the average and learning disabled were relatively low.

Discussion of self-esteem results

Grade differences were obtained with respect to home, general, and total self-esteem, and in all cases, grade 7 students obtained higher scores than grade 4. Grade 4 students did not differ in social and school self-esteem from grade 7 when the means were collapsed over diagnostic groups. Thus grade-related differences were evident only in home, general, and total self-esteem. A second type of development involved the interaction between diagnostic groups and grade. With respect to this type of development, differences existed in social self-esteem only. As previously referred to, the interaction was due to an increased social self-esteem for the gifted and a decreased esteem for both the learning disabled and average achieving, as a function of grade increase. That is, from grade 4 to 7, while the gifted students increased in their social self-esteem, the average achieving and the learning disabled at the same time decreased in their social self-esteem. These diagnostic group differences may be explained in terms of different histories of successes and failures accumulating over time (Fincham & Cain, 1986). For the gifted the repeated successes lead to higher self-esteem while the failure experiences of the learning disabled lead to lower self-esteem. For the average who may experience as much failures as successes, a confused situation could arise regarding how they perceive themselves, causing perhaps negative cumulative effect for their self-esteem.

There are numerous studies supporting age/grade changes in self-esteem but, there are mixed or conflicting results as well. Larson (1982, 1983) in two separate studies in which Piers-Harris Self-Concept Scale was used to study the general self-concept of grades 6 to 8 students reported a general increase in self-esteem as a function of grade. Thornburg and Glider (1984) also used Simmons and Rosenberg's Self-Esteem Scale to study grades 6 and 7 students and reported an increase in general self-esteem from grade 6 to 7. However the age range used was too restricted to provide a reliable measure of development. There are nevertheless a series of studies also using Simmons and Rosenberg's Self-Esteem Scale among a wide range of grade levels (i.e., Grade 3 to 12), all of which tended to indicate a decline in self-esteem scores as a function of grade, and especially at school transition points (e.g., Blyth, Simmons, & Calton-Ford, 1983; Simmons, Rosenberg & Rosenberg, 1973; Thornburg & Jones, 1982). Also, when Prawat, Grissom and Parish (1979) studied global self-esteem among grades 3 to 12, no developmental patterns were discovered.

Based on extant research and the present study, the evidence for age/grade-related development of self-esteem does not appear very strong; perhaps with the exception of the gifted. Further confirmatory studies are needed in this area. However, since self-esteem is predominantly a social construct, the grade by diagnostic group interaction reported with respect to social self-esteem may be credible. Since school-related self-esteem did not manifest this type of interaction obtained with respect to social self-esteem, it seems likely that something more than school achievement of academic intelligence may underlie self-esteem development. A likely candidate for the source of self-esteem is social reinforcement received from the home in the form of parental expectations.

The diagnostic group effect exhibited with respect to self-esteem in social, home, school, general, and total self-esteem resulted from significant differences between the gifted and the average achieving on the one hand, and between the learning disabled and the gifted on the other. In all cases the gifted obtained significantly higher scores compared with both the learning disabled and the average achieving. But the learning disabled and average achieving did not differ with respect to self-esteem - social, home, school, general and total. It is possible that the scale was not sensitive enough to differentiate the LD from the average (see Boersma, Chapman, & Maguire, 1978).

We can look for an explanation for the individual differences in self-esteem from the criteria used in identifying the diagnostic groups (i.e., the mild LD, average achieving, and achieving gifted). Since the learning disabled and average achieving had similar cognitive abilities, it seems that the initial level of cognitive abilities did not significantly influence the self-esteem of the average and learning disabled. The learning disabled and average achieving started with the same cognitive abilities and in the end manifested the same level of self-esteem. The reasoning that cognitive abilities may be the source of differences in self-esteem is supported by the fact that the gifted who had significantly higher cognitive abilities to begin with also in the end had significantly higher self-esteem. While no causation is implied here, the results appear more than coincidental.

The pattern of results evidenced in the present study with respect to self-esteem is in line with findings in the literature on individual differences in self-esteem (e.g., Colangelo, 1984; Lehman & Erdwins, 1981; Maddux, Scheiber, and Bass, 1982; Ketcham & Snyder, 1977). In self-concept research that compared the gifted with the non-gifted, the number of studies reporting significantly higher self-esteem scores for the gifted compared with the non-gifted was considerably greater than those reporting no differences or mixed results. Lehman and Erdwins (1981), using the California Test of Personality, found the gifted to possess higher self-worth and esteem at the elementary school level than the non-gifted. Gifted 6th graders obtained higher self-esteem scores than the non-gifted on the Piers-Harris Self-Concept Scale (Maddux, Scheiber, & Bass, 1982. However, this gifted-nongifted difference in self-concept was not manifested at grade 5 level in Maddux, Scheiber and Bass (1982). Ketcham and Snyder (1977) also used Piers-Harris Scale to study the general self-concept of grades 2 to 4 students and found the gifted at all grade levels to possess higher esteem than the non-gifted. Though Loeb and Jay (1987), Milgram and Milgram (1976), and Karnes and Wherry (1981) observed either no differences or mixed results in the general self-concept of the gifted compared to the non-gifted, it appears that the type of program the gifted students were enrolled in may have confounded the results (see Olszewski-Kubilius, Kulieke, & Krasney, 1988).

The present study therefore adds to the extant research in the self-concept literature which suggests that the self-concept of the gifted is relatively higher than the non-gifted. In addition, it was noted that the mild learning disabled students may have self-esteem comparable to that of the average achieving (Chapman, 1988). More highly sensitive instruments may be needed to delimit the average achieving from the mild learning disabled with respect to different aspects of self-esteem.

Also extant research on differences in self-concept between the learning disabled and the non-handicapped reinforces the findings and conclusions in the present study. A number of researchers found the learning disabled to possess significantly lower general self-esteem than the non-handicapped (e.g., Black, 1974; Bruininks, 1978; Bryan & Pearl, 1979; Hiebert, Wong, & Hunter, 1982; Larsen, et al., 1973; Ribner, 1978; Yauman, 1980). In learning disability research with respect to self-esteem, few negative or mixed results have been reported (e.g., Mann, 1960; Silverman & Zigmond, 1983; Tollefson, et al., 1982), but these studies did not appear to have used clearly delineated comparison groups, and none of the studies used Coopersmith's (1981) Self-Esteem Inventory to measure self-concept, as was the case in the present study.

Thus the findings in the gifted-nongifted research as well as those in the LD-nonhandicapped research, support the findings in the present study: that the gifted tend to possess relatively higher self-esteem than the non-gifted (i.e., average achieving and mild learning disabled lumped together). However, as earlier alluded to, it may be necessary to adopt a more specific self-concept instrument than Coopersmith's (1981) Self-Esteem Inventory in order to delineate the learning disabled from the average achieving (see Boersma, Chapman, & Maguire, 1978).

D. Individual differences in locus of control

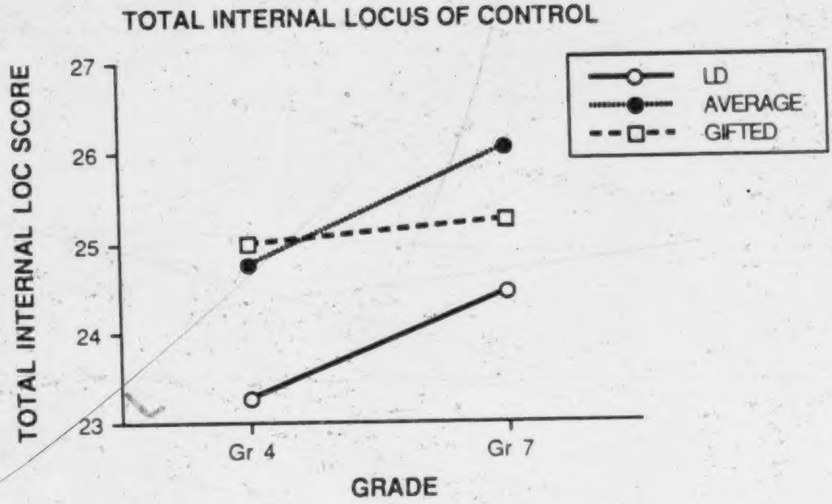
Academic locus of control was measured by the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky & Crandall, 1965). Three aspects of locus of control were examined, namely, total internal locus, and the break down of this internal locus into subscales involved in the acceptance of responsibility for failure (internal failure) experiences, and acceptance of responsibility for success experiences (internal success). Three 2(Grade) by 3(Diagnostic Group) ANOVAs were performed on students' locus of control scores using the total internal, internal failure, and, internal success as dependent variables. Since external locus was the complement of internal locus, only internal locus results were reported and discussed (see Appendix E for the ANOVA Tables).

Internal Locus of Control (Total)

With respect to total internal locus of control, significant main effects were obtained for diagnostic group (F=7.93, <.001) and grade (F=7.30, <.007) (see Table 23). The means collapsed over grade for the learning disabled, average achieving and the gifted were 23.85, 25.40, 25.12 respectively, and those for grade 4 and 7 collapsed over diagnostic groups were 24.33, 25.25 respectively. The means are depicted in Figure 7, and shows that the average and gifted students were not significantly different from each other but both groups were different from the learning disabled. Scheffe multiple comparisons (see Table 24) indicated that the learning disabled possess a significantly lower internal locus than both the average (F=7.08, <.001), and the gifted (F=4.53, <.011), but the gifted and average did not differ among themselves.

Figure 7

Internal Locus of Control (Total): Grades 4 and 7 learning disabled, average achievers and gifted.



Internal Locus (Failure)

With respect to internal locus of control (internal failure) or negative internality, no significant main effect for diagnostic group was observed but a grade (F=7.06, <.008) main effect was evident (see Table 25). The means collapsed over grade for the learning disabled, average achieving and the gifted were 10.92, 11.57, 11.27 respectively. The trend toward a diagnostic group mean effect was due to the differences between the learning disabled and average achieving approaching significance. The means for grade 4 and 7 were 10.95, 11.56 respectively, showing that grade 7 students accepted more responsibility for their failure experiences than did grade 4 students.

Internal Locus of Control (Success)

For internal locus of control (internal-success), there was a significant main effect for diagnostic group (F=10.84, <.001) but no grade main effect (see Table 26). The means collapsed over grade for the learning disabled, average achievers and the gifted were 12.92, 13.83, 13.84 respectively, and the means collapsed over diagnostic groups for grade 4 and 7 were 13.37, 13.69 respectively.

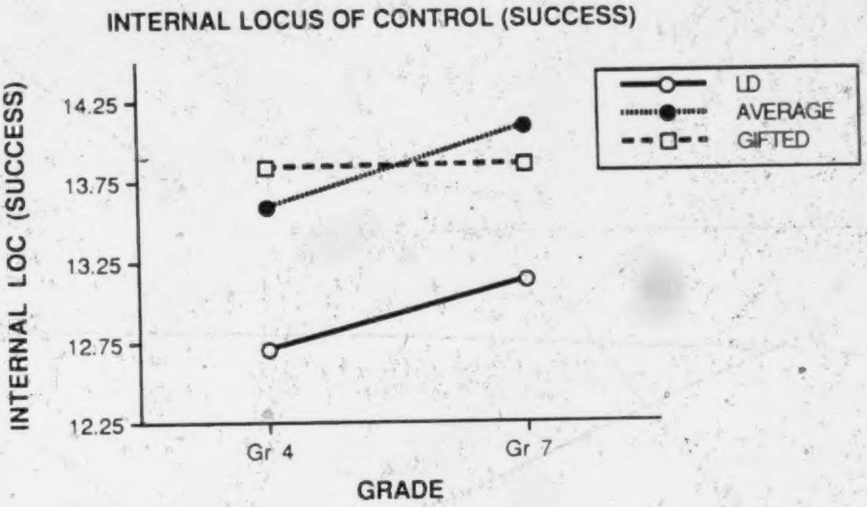
In order to determine where the diagnostic group differences were, Scheffe multiple comparisons were conducted (see Table 27), revealing the learning disabled to have a significant lower internal locus for success experiences than both the average (F=8.25, <.001), and the gifted (F=8.03, <.001), but with the average and gifted being the same, in accepting responsibility for their successes. As Figure 8 indicates there was no significant difference between the gifted and the average achievers in accepting responsibility for success experiences, though both groups were significantly different from the learning disabled in this respect at both grade 4 and 7 (see Figure 8).

Discussion of locus of control results

Grade differences with respect to total internal locus, and internal failure (locus of control) were observed. Grade 7 students obtained significantly higher scores for total internal, and internal failure but not internal success. This implies that considering the school population as a whole, (i.e., when the means were collapsed over diagnostic groups), children became more internally-oriented as they moved from grade 4 to 7 and were more accepting of responsibility for their failures but not their successes. These findings are in line with extant research.

Figure 8

Internal locus of control (Success): Grades 4 and 7 learning disabled, average achievers and gifted.



Connell (1980) reported an increasing pattern for known over unknown causes between grade 3 to 6 with a slight fall at grade 7 and subsequent rise thereafter. Gottfried (1981) and Harter (1980, 1981) in separate studies involving grades 3 to 9 students both documented increasing trends in intrinsic over extrinsic orientation, with increase in grade. Though the above studies (Harter, 1980; 1981; Gottfried, 1981) used a measure - Intrinsic versus Extrinsic Motivation, that stressed independence rather than control, both, constructs indicated the extent of personal involvement and independence as factors in performance.

There are a number of studies using locus of control instruments to study elementary and junior high students which have also demonstrated developmental trends. Studying locus of control among grades 3 to 12, Prawat, Grissom, and Parish (1979) found increasing internal locus with grade increase. As well, Connell and Tero (1982) in a longitudinal study of grades 3 to 8 students using the IAR (Crandall, Katkovsky, & Crandall, 1965) found an increase in mean scores of known over unknown perceptions of control. It is reasonable to suppose that independent of intelligence, previous achievement, or institutional context, students would increase in internal locus as a function of grade, because of increasing independence and responsibility accorded higher grades in the taking of learning decisions. As expected, increasing specialization in subject matter and expected higher criteria of competence would require students to put in more effort, and demonstrate initiative and goal-directed behaviour. It appears however that the grade-related changes were more likely to be manifested in known over unknown causes (Connell & Tero, 1982). This is because awareness of the specific causes of failures and successes provide children the opportunity to effect changes in these causes where possible or maintain the conditions if they are achievement-related.

With respect to diagnostic group differences, though the average and the gifted did not differ in internal total, they both differed from the learning disabled on this measure. Among the 3 groups, the learning disabled were the least and the gifted the most internally controlled. With respect to internal failure, which concerns accepting responsibility for failure experiences, the learning disabled, average achieving, and the gifted were not significantly different. However, the learning disabled differed significantly from both the gifted and average achieving on internal success. But the gifted and average achieving did not differ among themselves on internal success.

Thus, unlike the average achieving and the gifted, the learning disabled as a group appear to have accepted more responsibility for their failures, relative to their successes since with respect to internal failure they did not differ from the other two groups. Other researchers have supported this finding (e.g., Dweck, 1986; Fincham & Cain, 1986) and have attributed this pattern of results to individuals' history of failures compared to their successes. It tends to be accepted among students that failure is an indication of low ability or low effort, both of which some students consider internal to the individual.

As the gifted increased their string of successes and the learning disabled their failures over time, these students may develop either a positive or negative perception of their competence and self-esteem accordingly, as a function of communicative feedback from significant others. For the gifted, successes are normal, it will be easier to accept responsibility for further successes. The learning disabled, having already developed a low competence perception and self-esteem, may need a greater number of success experiences to be able to change this negative self-concept and turn them around to begin to accept responsibility for occasional successes.

Extant research supports the above findings (see Ellis, Lenz, & Sabornie,1987). Fincham and Barling (1978) for example, found a decreasing order of internal locus among learners, with the gifted being the most and the learning disabled the least internally oriented. Numerous other studies support the idea that the learning disabled are generally externally oriented or have low internal locus relative to the average and gifted (Aponik & Dembo, 1983; Jacobsen, Lowery & DeCette, 1986; Stipek & Hoffman, 1980). The learning disabled accepted responsibility for their failures to the same extent as average and gifted students, but did not accept responsibility for their successes as much as the other two groups. This is not emphasized enough in the literature. The present study calls renewed attention to this aspect of locus of control - not accepting responsibility for one's successes as an important identifying characteristic of the learning disabled which has implications for intervention discussed in a later section.

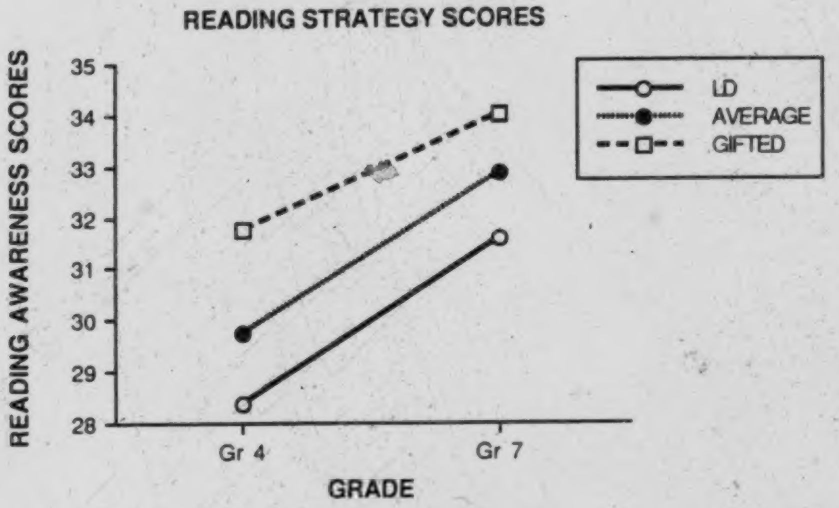
E. Metacognitive Reading Awareness

This metacognitive reading awareness with respect to reading was measured by the Index of Reading Awareness (IRA) (Paris & Jacobs, 1984). It provides one composite score instead of subscale scores, and represent students' level of awareness in reading. First the ANOVA results will be presented with brief discussions followed by factor analysis and comparison of the LD, average and gifted on the factor scores of the IRA. This latter analysis will be done to determine which aspects of the IRA discriminate between the LD, average, and gifted students (see Appendix F for ANOVA Tables).

Two(Grade) by 3(Diagnostic Group) ANOVAs were performed using the total scores of students' Index of Reading Awareness as the dependent variable. Significant main effects were evident for diagnostic group (F=14.02, <.001) and grade (F=40.98, <.001) (see Table 28, Appendix F). The means collapsed over grade for the learning disabled, average achievers and the gifted were 29.97, 31.30, 32.88 respectively, whilst the means collapsed over diagnostic groups for grade 4 and 7 were 29.96, 32.80 respectively. Scheffe multiple comparisons of means (see Table 29) indicated that the learning disabled demonstrated a significant lower awareness of reading strategies than the average (F=2.99, <.05), and the average were lower than the gifted (F=4.30, <.014). Figure 9 shows that the learning disabled, average achieving, and the gifted are at significantly different levels in their metacognitive reading awareness at grade 4 as well as at grade 7, though all the three groups appear to experience increases in their metacognitive reading awareness. The gifted were most metacognitively aware of reading strategies at both grade 4 and 7 as compared to the average and the learning disabled; and the average in turn functioned at a relatively higher level than the learning disabled. Before discussing the IRA results, a few observations will be made about the IRA.

Figure 9

Metacognitive reading awareness: Grades 4 and 7 learning disabled, average achievers and gifted.



In chapter 2, attention was called to the fact that Paris and Jacobs' (1984) Index of Reading Awareness (IRA) only provided global scores (i.e., total metacognitive reading awareness). Thus as measured by the IRA, it was not possible to provide complete information regarding what specific aspects of students' metacognitive reading awareness differentiated among learners of different abilities (i.e., between the LD, average achieving and the gifted).

Discussion of Index of Reading Awareness (IRA) results

With respect to the metacognitive awareness of reading as measured by the Index of Reading Awareness (Paris & Jacobs, 1984), grade and diagnostic group effects were obtained using the global scores in 2 by 3 way ANOVAs. Grade 7 students were significantly more aware of the metacognitive aspects of reading than grade 4 students. For the diagnostic groups, the gifted were most aware of the metacognitive aspects of reading followed by the average achieving, with the learning disabled being least aware. Thus this study has shown that the level of metacognition in reading is an important differentiating variable between grade 4 and 7, as well as among the learning disabled, average achieving and gifted student *when global scores* of the IRA are used in the analysis.

This increase in metacognitive in metacognitive reading awareness is understandable since it can be assumed that after upper elementary, students are required to carry out intensive processing of text in specific content areas as they begin to focus on specialized areas of content. Their successes in these content areas would depend on their ability to process text deeply in these areas and to understand the concepts. Before students can do this however, they must become increasingly aware of reading strategy variables (Kirby, 1984; 1987; Schunk, 1987). Paris and Lindaeur (1982) undertook an extensive empirical review in the area of differences in reading strategy awareness of lower and upper elementary students and found developmental differences, with older students evidencing higher awareness of reading strategies. The results of the present study is thus in line with extant research concerning the development of metacognitive skills in reading as children move up the grades.

The results of the diagnostic group differences are also in line with the existing research results. Paris and Lindaeur (1982) reviewing research on low and high achievers' metacognitive and reading abilities found the low achievers to have lower awareness of reading variables or strategies relative to their higher achieving peers (see also Jacobs & Paris, 1987; Paris & Jacobs 1984; Paris & Oka, 1986; Kirby & Moore, 1987). Other studies have found the learning disabled to be inactive, less planful and not monitoring their activities, as well as being less evaluating when processing text (Borkowski, Johnston, & Reid, 1987; Brown, 1980; Kirby, 1984; 1987; Markman, 1981; Meichenbaum, 1986; Paris, 1978; Paris & Oka, 1986; Torgesen, 1982). Apart from confirming extant research that the learning disabled were significantly less aware of reading strategies than the non-handicapped, the present study also noted that the average achieving were clearly delineated from both the learning disabled and the gifted on the awareness of reading strategies. The average achieving were significantly more aware than the learning disabled but less aware than the gifted peers with respect to reading variables.

Note however that as earlier referred to in the literature review and in the beginning of the present discussion the results of the IRA reported by Paris and other (e.g., Jacobs & Paris, 1987; Paris & Jacobs, 1984; Paris & Oka, 1986) concerning developmental and individual differences are based on the use of a global score of the metacognitive aspect of reading as measured by the IRA. It was thus difficult in the present study to provide complete information regarding what specific aspects of students' metacognitive awareness of reading differentiated among learners of different reading achievement levels.

It seems then that in its present form, the discriminating power of the IRA (i.e., Paris & Jacobs, 1984) is relatively poor, being more sensitive however at grade 4 than at grade 7 (ie., at lower than at higher grade levels). It must be noted that the IRA was originally developed for grade 3 to 5, which may partly explain why it appears less discriminating of grade 7 students. It must also be noted that the IRA does not differentiate between recognition and free recall on the one hand and between awareness (knowledge) and performance (use of knowledge to solve real world problems) on the other. This differentiation may need to be built into future metacognitive instruments to produced increased effectiveness in differentiating among learners of different abilities and achievement levels. That is, the IRA items required students to only recognize the correct response from among three alternatives (see Table 30). Students were not expected to recall or self-generate the responses. As well, further studies on the IRA to sample metacognitive reading awareness more widely using more item try-outs to purify the factors of the IRA will be needed in future studies.

The relationship between reading achievement and students' self-perceptions and metacognitive reading awareness

The results of these correlations are summarized in Tables 31-34 (see Appendix G). Some self-theorists have proposed that the self-evaluative process is multidimensional and hierarchical in nature. That is, it comprises a network of many areas of children's self-perceptions arranged in an increasing order of generality (e.g., Epstein, 1973; Shavelson, Hubner, & Stanton, 1976; Harter, 1982; Rosenberg 1979). According to this theorizing, self-esteem is a more inclusive and general construct than locus of control and perceived competence which may be considered as different types of lower order and specific constructs within the self system. This implies that in the normal school population, children's self-perceptions in different domains are interrelated and more or less specific to school contexts. For example, children's cognitive competence perceptions would be more specific to school contexts than general competence perceptions (Harter, 1982). As well, academic self-concept would correlate more with school related activities than general self-concept (Chapman, 1988).

The areas of students' self-perceptions examined here included cognitive and general competence perceptions, self-esteem, with respect to school, and general self-esteem, and locus of control (internal success and failure) and awareness of reading strategies. Correlations using scale scores as measure were computed for grades 4 and 7 learning disabled, average achieving, and the gifted separately since it was reasoned that the relationships among children's self-perceptions and reading achievement may not be invariant across grade and different ability levels. The results of the relationship between achievement and the self-perception measures are summarized in Table 35 (see Appendix G).

The relationship between reading achievement and perceptions of competence

The relationship between two aspects of reading achievement - vocabulary and comprehension - and students' perceptions of their competence - in the cognitive, social, and general areas - were examined using Pearson's r, to answer the question, Is there a relationship between perception of competence and reading achievement? The correlation results are presented under the different subtests of the Perceived competence Scale for Children (Harter, 1982) - i.e., cognitive general and social perceptions.

Perception of Cognitive Competence

This school-related perception was positively related with the vocabulary level of Grade 4 average (r=.31*) and gifted students (r=.39**) and Grade 7 Gifted students (r=.30*), but negatively related with Grade 7 LD (r=-.46**) vocabulary (see Table 34). Comprehension was significantly related with the perceptions of cognitive competence of Grade 4 LD (r=.29*), average achieving (r=.50***) and gifted students (r=.53***), but only for gifted students at Grade 7 level (r=.33*). It seems then that for gifted students, irrespective of the domain of reading assessed (i.e., whether vocabulary or comprehension) or Grade level - (i.e., whether Grade 4 or 7) - the higher their achievement, the higher their cognitive perceptions of competence. However, for the average students, there was a clear relationship between reading achievement and cognitive (school-related) perception of competence at only Grade 4 level. For the LD youngsters, though reading achievement level was not a significant indicator of level of perception of cognitive competence at lower grades (i.e., Grade 4), at higher grades (i.e., Grade 7), the opposite seems to be the case I.e., the lower their level of reading achievement, the higher their perception of cognitive competence. This may be a reflection of a low level of awareness and a manifestation of a discrepancy between the way LD youngsters' perceive themselves and their achievements vis a vis their actual (objective) performance scores.

Social Perception of competence

For both Grade 4 and 7 LD students, neither vocabulary nor comprehension was significantly related with their social perceptions of competence. However, for the average students, though comprehension was not significantly related with social perception, vocabulary level was. The higher Grade 4 average students vocabulary the higher their social perception (r=.32*). but the opposite was true for Grade 7 average students (r=-.40***). For gifted students, a significant relationship was found only at Grade 4 level between social perception and vocabulary (r=.39**) and between social perception and comprehension (r=.54***).

General perception of competence

This aspect of perception of competence is related to an overall feeling of competence and is not specific to school situations alone. The higher the vocabulary of the gifted (Gr 4: r=.38**; Gr 7: r=.56***) the higher their perceptions of competence. Similarly, the higher the comprehension of Grade 4 (r=.39**) and Grade 7 gifted (r=.40***) students the higher their general perceptions of competence. For average students, a positive relationship was observed only at the Grade 4 level between both vocabulary (r=.38**) and comprehension (r=.36**) and general perceptions of competence. For the LD, a negative relationship existed between Grade 7 LD's vocabulary and general perception of competence and a positive relationship was evidenced between Grade 4 LD students' reading comprehension and general perceptions of competence. It is possible that grade 7 LD students do not consider vocabulary development as enhancing of their general perception of competence.

Relationship between self-esteem and reading

The relationship between 3 areas of students' self-esteem (i.e., school, social, general) and reading (i.e., vocabulary, comprehension) were examined using Pearson's r, and the results reported under the 3 domains of self-esteem, i.e., school, social, and general esteem.

School Self-Esteem

Vocabulary level was positively related to school esteem for both the LD (Gr 4: r=.29*; Gr 7:r=.32*) and the gifted (Gr 4:r=.31*; Gr 7: r=.45***) but not for average students at both grade levels. A positive relationship also was obtained between comprehension and school esteem for Grade 4 LD (r=.41**) and Grade 7 gifted students (r=.29*). It seems that for both grade 4 and 7 LD high vocabulary is viewed as enhancing of their school self-esteem.

Social Self-Esteem

At grade 4 level, the higher students' vocabulary (LD:r=.27*, Average: r=.36**; Gifted: r=.38**) the higher their social self-esteem; and as well, the higher Grade 4 students' comprehension level, the higher their social esteem (LD:r=.39**; Average: r=.37**; Gifted: r=.41***). However, for Grade 7 students with the exception of a negative relationship between vocabulary and social esteem (r=-.46***) reading (vocabulary and comprehension) did not produce significant relationships with social esteem (see Table 34).

General self-esteem

Though at Grade 4 level, vocabulary was positively related to general self-esteem for students of different reading achievements (LD:r=.39**; Average: r=.30*; Gifted: r=.28*), at Grade 7 level, a positive relationship existed for gifted students only. Comprehension at both grade levels produced a positive relationship with the general self-esteem of gifted students (Gr 4: r=.32*; Gr 7: r=.32*), but this was so only for Grade 4 LD (r=.51***) and Grade 7 average students (r=.29*).

Locus of control and reading

Two areas of locus of control - internal success and internal failure - were correlated with students reading vocabulary and comprehension and the results reported separately for internal failure and success.

Internal failure

With the exception of a negative relationship between internal failure and Grade 7 LD students' vocabulary, and a positive relationship between Grade 7 gifted students' comprehension with this subscale of locus of control, students students' internal failure seems to have little relationship with their reading level.

Internal Success

Though vocabulary level for both Grade 4 and 7 and comprehension level for Grade 4 students (i.e., LD, Average, Gifted) were not significantly related with their internal success, Grade 7 students' comprehension was. The correlations between internal success and comprehension were .27, .34 and .37 for Grade 7 LD, Average and Gifted respectively.

Index of Reading Awareness and reading achievement

Students' reading level - in vocabulary and comprehension - and their scores on the Index of Reading Awareness (IRA) - which measures metacognitive awareness in reading - were correlated using Pearson's r, and yielded the following results.

The higher Grade 4 students' reading achievement, both in vocabulary and comprehension, the higher their metacognitive awareness in reading. The correlations between vocabulary and the IRA scores were .40, .44, and .48 respectively for Grade 4 LD. average. and gifted students; and those between comprehension and the IRA scores for Grade 4 were .49, .45, and .48 for the LD, average, and gifted respectively. At grade 7 level, neither vocabulary nor comprehension for the LD, average achieving nor the gifted produced a significant relationship with the IRA. As earlier indicated, the IRA is a global/general metacognitive instrument which taps more basic knowledge about reading which is more applicable at lower grades than at higher grades, and hence the IRA's significant relationship with achievement at grade 4 but not at grade 7 level. The validity of the measure for Grade 7 could therefore be a problem.

Discussion of the relationship between students' self-perceptions and reading achievement

The question of whether there was a relationship between reading achievement and students' self-perceptions was examined with respect to perception of competence (Harter, 1982), self-esteem (Coopersmith, 1981), locus of control (Crandall, Katkovsky, & Crandall, 1965) and metacognitive reading awareness (Paris & Jacobs, 1984). This question was addressed at grade 4 and 7 levels and with respect to the LD, average achieving, and the gifted in largely regular classes. It was hypothesized that school-related self-perceptions would produce higher correlations with achievement in reading (vocabulary and comprehension) than either general or social self-perceptions. Pearson's r was conducted using the subscale scores of the self-perception measures examined in order to address this issue.

The results indicate that there is a relationship between students' self-perceptions and reading achievement as suggested by numerous studies (e.g., Crandall, Katkovsky, & Crandall, 1965; Harter, 1982; Paris & Oka, 1986; Coopersmith, 1981), but the relationship is not limited to school perceptions alone. The findings vary with respect to grade, achievement level, as well as the subtests within a given measure. That is, for each self-perception measure, subtest differences were observed in the sizes and direction of the correlations. It seems then that it is inaccurate to make extended general statements regarding the relationship between achievement and self-perceptions without specifying the contextual factors such as grade and achievement level, and learning environment.

The detailed results in the present study appear to contradict widely held notions about the relationship between achievement and self-perceptions (e.g., Chapman, 1988; Margalit & Zak, 1984; see also literature review). However, further examination of the results may help to clarify things.

The sizes of the correlations in the present study (see Table 34) are comparable in many instances to correlations obtained in other studies (e.g., Harter, 1982; Paris & Oka, 1986). Yet, many of the correlations here which were as high as .26 were not statistically significant at .05 level, owing to the smaller sample sizes resulting from missing data. Glass and Hopkins (1984, p. 181) have noted that "standard error of the mean" is progressively reduced when "n" increases. While in studies such as Paris and Oka (1986) that found correlations as low as .12 to be significant used large "n" (i.e., 800), the present study sometimes contended with 'n' around 25 because of missing cases. For the correlation results Paris and Oka collapsed the high, average and low achieving subjects

It was also observed that where negative correlations existed between self-perceptions and achievement, they were usually for the LD subgroup and least likely to be associated with the gifted. That is, more often-than-not, the higher the gifted students' achievement in reading, the higher their self-perceptions, whereas for the LD, the opposite often was the case. This discrepancy with respect to the LD subgroup may be explained in terms of (1) a general deficiency in metacognitive awareness (Meichenbaum, 1986;

Paris & Oka, 1986) as well as (2) learned helplessness (Dweck, 1986; Fincam & Cain, 1986), a situation in which repeated failure experiences induce a persistent negative feeling of incompetence, and esteem of the LD.

Among the areas of reading achievement examined, the correlations were particularly low and largely insignificant with respect to locus of control (internal failure, internal success). Though some studies have reported a positive relationship between academic locus of control and achievement (e.g., Crandall, Katkovsky, and Crandall, 1965), these studies by and large used total internal scores instead of the subscales of internal failure and internal success. Moreover, the correlations obtained especially for grades 6, 8, and 10 between total internal locus (IAR) and California Achievement Test were modest, ranging between .20 and .30. As referred to in the literature review, Crandall was unsure of why a lower correlations would exist at higher grades than at lower between achievement and academic locus of control. It may be that reading as such has little effect on the assumption of responsibility for one's failure and success experiences. The results of the present study correlating total internal locus with achievement in reading produced a significant relationship (Crandall, Katkovsky, and Crandall, 1965) at both grade 4 and 7, showing that though a global internal academic locus may be significantly related with achievement in reading, accepting responsibility for failure and success experiences may not be directly related with achievement. A wider sampling of content (e.g. to include mathematics, science, etc.) may be needed in future to provide more insight into the relationship between achievement and students' academic locus of control.

Overall, the results indicate that some relationship does exist between students' self-perceptions and achievement over and above academic or school-related situations. While this may be true in many instances, it will be more informative if researchers provided background information regarding population and task characteristics to qualify statements made concerning the relationship between achievement and students' self-perceptions since this area is very complex indeed. This is so because there appears to be an indication (at least in the present study) to the effect that the differing areas of achievement (e.g., reading, mathematics, science, general achievement) may relate differently with different aspects of locus of control (e.g., total internal, internal failure, internal success). It is also likely that locus of control specific to specific content areas being assessed are likely to have stronger relationship with achievement in those content domains. As such the development more more content-specific locus of control instruments may be needed in future to verify this.

V: DISCUSSION OF RESULTS

A. Purpose of the study

The purpose of this study was to identify those aspects of children's self-perceptions manifesting developmental and individual differences in upper elementary and junior high students. These perceptions were examined in selected areas of affect and metacognition (metacognitive reading awareness). The areas of affect examined included perceived competence, locus of control, and self-esteem, each with subscales and considered to be more or less related to achievement (Dweck, 1986; Fincham & Cain, 1986; Schunk, 1989). In metacognition, students' awareness of reading strategies was examined, as a viable link between cognition and affect. Grades 4 and 7, or upper elementary and junior high students were focused upon. In many school systems, these two grades tend to be transition grades from lower to upper elementary, and from elementary to junior high (see Mulcahy, et al., 1987). These transition grades have been implicated in negative affective states that are manifested by students. That is, some of the negative affects developed among some students (especially the learning disabled) are attributed to changes in the institutional and learning contexts experienced by these youngsters as they move from say elementary to Junior high and from junior high to senior high. These negative effects are manifested in reduced scores on perceived competence, locus of control, and self-esteem (see Eccles & Midgley, 1989).

It was hypothesized that if 3 non-overlapping groups of learners, delineated with respect to differences in cognitive abilities and reading achievement and teacher-perceived student characteristics (in learning, motivation and creativity) were compared, these students will also differ with respect to developmental and individual differences in their affective characteristics and metacognitive reading awareness, because of differences in the social reinforcement associated with ability and achievement differences. Since the different subscales of affect examined were more or less related to academic work (Coopersmith, 1981; Crandall, Katkovsky & Crandall, 1965; Harter, 1982) , it was of interest to find out if this had influence in the identification of the specific subscales of the self-perception measures which would clearly, partially, or not differentiate among the learning disabled, average achieving, and achieving gifted.

Differences among the mild learning disabled, average achieving, and achieving gifted with respect to their affect and metacognitive reading awareness were hypothesized to be significant because of differences in achievement and cognitive abilities which may be associated with variation in the reinforcement children receive from parents, peers and teachers with respect to successes and failures over time (see Dweck, 1986; Fincham & Cain, 1986). The reinforcement received concerning children's successes and failures provide cues to children concerning their level of competence and will prompt them to perceive their competence as high or low. With a high social value placed on cognitive abilities and school achievement, especially in a middle-class culture, these differences would likely be reflected in children's self-esteem. Children with high achievements and cognitive abilities valued by society will perceive higher self-esteem and manifest a higher internal locus of control, and will tend to accept not only their failure, but more so their successes than children of lower academic status (Renzulli, 1978).

As background to the study, and further detailed in the literature review, attention was paid to conflicting results in the developmental and individual differences research in various domains of affect. Specifically, the conflicting results were illustrated with respect to perceived competence, locus of control, and self-esteem which were viewed as inherent aspects of motivation i.e., more or less associated with achievement-oriented behaviour (Dweck, 1986). Three possible explanations were suggested for the discrepant findings. First, there appeared to be a number of general and specific affective measures which may be tapping different aspects of affect at different levels of generality (Shavelson, et al., 1976). Because of differences in the scales of these measures, different results may have resulted even with the same comparison groups used in different studies. It appeared that those perceptions of self-efficacy (Schunk, 1989) that were more academic related (e.g., cognitive perception of competence) would distinguish best among the mild learning disabled, average achieving, and achieving gifted (see Chapman, 1988). The second explanation was related to differences in definition and identification of diagnostic groups (i.e., LD, avera[illegible] gifted) observed. Multiple etiologies, especially for the learning disabled, were noted possibly because different disciplines tend to claim authority in the field of exceptionality, and each presents its definition with little chance of agreement in identification procedures and operationalization of definitions. This issue was addressed by adopting a broad identification procedure that included both cognitive and affective criteria. These identification procedures used cut-offs on cognitive abilities, and reading achievement and teacher-perceived student characteristics that would yield clearly delineated groups of mild learning disabled, average achieving and gifted students (see method section).

On cognitive abilities (verbal and nonverbal), both the average achieving and the mild learning disabled obtained scores within one standard deviation of the mean. However, the learning disabled were one or more grades below grade level in reading achievement compared to their average peers. On all the criteria measures for identification, the gifted performed one or more standard deviations above the mean. By obtaining relatively homogeneous groups within the regular classes, an opportunity was created to make more meaningful comparisons among learners. Comparing children in special classes with those in regular classes would have confounded the results (Olszewski-Kubilius, Kulieke, & Krasney, 1988). Because of this only children in regular classes were compared i.e., the samples were taken from regular classes.

Three types of differences were examined: diagnostic group, grade, and grade by diagnostic group differences. That is, differences due to achievement, years of classroom experience, and the way these two factors intermingle to create a composite effect. Each area is discussed separately.

B. Individual differences

The first type of differences examined among students was diagnostic group differences. That is, differences in affect related to initial differences in cognitive abilities, and achievement. This question did not address developmental changes i.e., grade 4 compared to grade 7, nor the interaction between grade and diagnostic groups.

Individual differences in perceived competence

Since what initially distinguished among the mild learning disabled, average achieving and achieving gifted were school-related competences, it was expected that school-related perceptions would delineate groups better than non-academic perceptions. This was partly supported. That is, on perceived competence, the diagnostic group effects observed were in cognitive (school-related) and general (non-school) perceptions. Physical and social (non-school) perceptions did not discriminate among learners. This was the case at both grade 4 as well as grade 7. In fact in Harter's (1982) study of the intercorrelations among the subscales of the Perceived Competence Scale for Children, she noted that "the social and physical subscales are highly related across samples,..., (whereas the) relationship between the cognitive subscale and both social and physical subscales tends to be lower with some sample variation." (P. 92). The close relationship between the social and physical subscales may be due to the high peer influence and peer values with respect to "sports and socials", which are not necessarily related to academic work. With regard to 4 different samples, Harter found correlations between cognitive and general perceptions of competence to be consistently high (ranging between .46 and .58). General perception of competence (self-worth) may be more affected by one's academic success than social or physical. It is to be noted here then that apart from school-related perceptions general self-perceptions also distinguish between the learning disabled and non-handicapped learners.

In the literature review, Chapman (1988), in an extensive meta-analytic study compared general and specific self-concept scales among the learning disabled, and non-handicapped. He found that the learning disabled and non-LD (comprising the gifted and average), did not differ in general perceived competence but differ in cognitive and/or academic competence perceptions. The present study is unique in that, apart from confirming Chapman's (1988) observation referred to above, it further demonstrated that when the non-LD contrast group was split into average achieving and achieving gifted, both cognitive and general perception of competence were able to distinguish between the learning disabled and the gifted (a subgroup of the non-LD), and between the average and the gifted; but not between the mild LD and average. These two initially differed not in cognitive abilities but in reading achievement and "motivational characteristics" (learning, motivation and creativity) (see Renzulli, et al., 1976). Furthermore, the average achieving and the gifted which combined to form the non-LD contrast group differ with respect to both cognitive and general competence perceptions, perhaps because of the initial differences both in cognitive abilities, achievement, as well as motivational characteristics. Harter's Perception of Cognitive Competence may not be specific enough as the groups were identified on reading.

Both social and physical perceptions of competence, which were less school-related did not as expected differentiate among the learning disabled, average and gifted. One possible explanation why children were not delineated on social and physical competence perceptions was because these areas do not depend on how well children perform academically at school. Moreover, the identification procedure for the diagnostic groups was based mainly on school-related abilities (i.e., cognitive abilities, achievement, and the achievement-oriented characteristic of students).

Individual differences in self-esteem

It was initially hypothesized that school-related perceptions rather than non-academic perceptions would differentiate among the learning disabled, average and gifted groups. This seemed largely to be the case on perceived competence. However, when the result of self-esteem was examined, school-related esteem did not differentiate between the learning disabled and average achieving. Interestingly also, none of the subscales of Coopersmith Self-Esteem Inventory (Coopersmith, 1981) -social, home, school, general, and total - could distinguish the learning disabled from the average achieving. Two possible reasons may be offered, one related to the generality of Coopersmith's (1981) self-esteem instrument, and the other related to the closeness of the two subgroups of population (mild LD and average achieving) being compared in terms of cognitive abilities.

In the literature, attention was called by Boersma, Chapman, and Maguire (1978) to the inability of general self-concept measures such as Piers-Harris Self-Concept Scale and Coopersmith Self-Esteem Inventory, to distinguish the learning disabled from the non-handicapped. Harter (1982) specifically mentioned Coopersmith Scale as too general a measure of self-concept. However, little research had been conducted on it. If however the general nature of the scale alone was the issue, then the average achieving and the gifted, and the learning disabled and gifted would also not be delineated with respect to the different subscales of self-esteem. But Coopersmith's Scale differentiated these latter pairs of groups on social, home, school, and general self-esteem. It is more likely that the differences in cognitive abilities among learners may be a stronger factor for the explanation of the differences in self-esteem among students. The groups were initially identified by differences in their cognitive abilities, achievement, and motivational characteristics. But note that the mild learning disabled and average achieving did not differ to any great extent in cognitive abilities, and did not also differ in self-esteem; on the other hand, the average and gifted, and the learning disabled and the gifted who differed among themselves in cognitive abilities and achievement and also differed with respect to self-esteem (social, home, school, general, and total). While no causal relationship is implied here, it is suggestive that cognitive abilities may play an important role in this. This needs to be further clarified in additional research.

Individual differences in locus of control

The pattern of individual differences in locus of control, attributable to differences in cognitive abilities and achievement were different from both perceived competence and self-esteem results. First, the 3 groups of learners - the mild learning disabled, average achieving and achieving gifted - did not differ with respect to internal failure, or accepting responsibility for failure experiences. The research literature indicated that severe learning disabled more than the average achieving population readily accept responsibility for failure but not success experiences (e.g., Adelman & Taylor, 1983; Pearl, 1982; Perna, Dunap, & Dillard, 1983). However, no evidence exists in the literature for significant differences existing among all exceptional groups of learners with respect to internal failure. In this study, the mild learning disabled, average achieving, and achieving gifted equally accepted responsibility for their failures. This clear demonstration of no differences among all these groups with respect to internal failure manifested in the present study, if replicated in succeeding studies must has far-reaching implications for instruction. It implies that we must explain individual differences in locus of control in terms of differences in success but not failure experiences and train children to take more responsibility for their successes to increase their achievement motivation.

What differentiated the mild learning disabled, average achieving, and achieving gifted is not accepting responsibility for failure experiences, nor total internal locus of control: rather, it was internal success, or accepting responsibility for success experiences that differentiated these diagnostic groups of learners with respect to locus of control. Whereas the average achieving and gifted seem to accept responsibility for both their failures and successes, for the learning disabled, they only accepted responsibility for their failures but were unable to accept as much responsibility for their successes, as their peers. One possible reason for this is that for the learning disabled, repeated failures establish a pattern of expectation for future failure, low self-esteem, and low competence perception. This low self-concept and perceptions of control make it easier for them to accept responsibility for their failures more than for them to accept responsibility for their successes (see Fincham & Cain, 1986). This has important implications with respect to attributional retraining (Andrews & Debus, 1978; Ellis, Lenz, & Sabornie, 1987).

It has been referred to earlier that in the present study, the learning disabled differed from the gifted but not very much from the average on both cognitive and general self-perceptions, and academic and general self-esteem.

Individual differences in metacognitive reading awareness

In terms of metacognitive reading awareness, the learning disabled were also deficient, in that among the three groups examined they obtained the lowest scores. The average achieving performed better than the learning disabled and the gifted demonstrated the highest awareness of reading strategies among the three groups. This result with respect to metacognitive reading awareness is in line with extant research that has examined metacognition in reading among different learners (e.g., Paris & Lindaeur, 1982; Paris & Oka, 1986). Together these studies that use global scores have found that low ability groups manifest deficiency in metacognition with respect to reading along with other researcher (e.g., Brown, 1978; Meichenbaum, 1986).

However, the research literature seldom specified which aspects of metacognitive reading awareness actually differentiated among the LD, average achieving and the gifted. The present study thus added further information to the above by identifying 4 factors as underlying the Paris and Jacobs (1984) Index of reading awareness - IRA -(a measure of metacognitive reading awareness); and observing that the IRA is less discriminating at grade 7 (higher grades) than it is at grade 4. Unlike grade 7, at grade 4 level an interaction existed between factor and group: the gifted tended to perform better than the average and the gifted on knowledge of reading comprehension (Factor II) and Conditional Knowledge, but less on self-knowledge (Factor I and strategy knowledge (Factor III). The opposite was true for the LD, and the average achieving were of average standing for all 4 factors. It was explained that the IRA might be less discriminating at higher grades owing to the fact that the instrument was specifically developed for lower grades (i.e., grades 3 to 5). And at grade 4 level, the gifted might have performed at a lower level in self-knowledge, and strategy knowledge because the instrument was not sensitive enough.

C. Grade-related differences in self-perceptions

The second kind of differences among learners examined was grade-related differences among learners. These differences were minimally related to cognitive abilities and reading achievement, since the scores of the learning disabled, average achieving, and the gifted were aggregated for grade 4 and compared with grade 7. The following interpretational guidelines were used: If the means were the same, development was described as stable; if grade 4 mean was less or greater than grade 7, there was an increasing and/or decreasing developmental pattern respectively.

It is universally accepted that children's prior knowledge, as well as perceptual, social, cognitive and metacognitive awareness increase as a function of grade (Crain, 1980; Paris & Lindaeur, 1982; Piaget, 1950, 1952; Thomas, 1979). In examining possible grade-related changes in affect in the present study, it was hypothesized that those areas of affect that are related to the areas of development referred to above, may also manifest age-related changes within the normal population. With special populations such as the learning disabled, and gifted it is uncertain what the trend might be. It is also unlikely that all the subscales within different areas of affect and metacognition would respond equally to development changes. For one thing, society rewards some activities more than others and development in areas rewarded may be more likely to manifest grade-related changes over time than those areas not equally rewarded. Differences in affect will be found where significant others make inter-grade comparisons, give more opportunities and responsibilities to older children, and set higher standards and competence levels for the older as compared to younger children (see Eccles & Midgley, 1989). Where these differential age-related treatments exist either in the school or at home, the related social cues will be interpreted as an indication of a higher or lower competence as the case may be, and children will perceive their competence accordingly. In areas such as physical and general competence where inter-grade comparisons may be infrequent, differences in children's perceptions are less likely. As well, if SES is not a variable, and grade 4 and 7 students enjoy equal social status, inter-grade differences in children's affective perceptions are also unlikely. The above reasoning remains hypothetical would need to be empirically tested.

In the present study, the results indicate that with respect to physical and general competence perceptions, internal success as well as social and school self-esteem, scores were stable from grade 4 to 7. However, for cognitive and social competence perceptions, total internal locus of control, internal failure, as well as self-esteem with respect to home, general, and total, and reading strategies awareness, increasing grade-related differences were manifested. That is, grade 7 students obtained significantly higher scores than grade 4. When the results of the study were compared with extant research, both parallel findings as well as discrepancies were revealed.

Grade-related differences in perceived competence

Beginning with children's perceptions of competence, though Harter (1982) reported stability of scores across grades 3 to 9 in cognitive, social, physical, and general competence, in the present study, stability of scores was found only in the perceptions of physical and general competence. Cognitive and social perceptions of competence manifested increasing developmental patterns (grade-related). In a longitudinal study in which Connell and Tero (1982) used Harter's (1982) Perceived Competence Scale for Children at grades 3 to 8 levels, Harter's (1982) results were replicated in the cognitive, social, physical, and general competence perceptions, i.e., the scores were stable across grades 3 to 8.

Thus while the present study found scores for cognitive and social competence only to increase as a function of grade both Harter (1982) and Connell and Tero (1982) found all the subscales of competence perceptions to be stable across grades 3 to 9. A possible explanation may be found in terms of the differences in population composition and rural-urban differences in terms of subjects' backgrounds.

Harter (1982), unlike the present study, used a normative sample that appeared to be more heterogeneous, for she included in her sample extreme groups of learners such as the severe learning disabled and the mentally retarded. The present study used mild learning disabled, average achieving and gifted students and combined urban and rural children in the samples whilst Harter's (1982) samples were largely of urban backgrounds. It is possible that differences in SES related to parental values, attitudes and expectations may be a confounding factor giving rise to the different results between Harter's (1982) and the present study.

Indeed, the notion of the stability of children's perceptions of competence across grades has been contradicted in some studies (e.g., Berndt, 1987; Berndt & Hawkins, 1987; Nottelman, 1982; 1987). These negative findings that usually suggest that declining developmental patterns, exist in children's competence perceptions are from studies that used samples from grades 3 to 9 and Harter's Perceived Competence Scale for Children as the measuring instrument. However, this cluster of studies (see Eccles & Midgley, 1989) was designed specifically to examine school transition effects on adjustment to school contexts which may partly explain the findings which appear to contradict both the present study and Harter's (1982). Further replication studies will be needed to clarify these methodological problems.

Thus, 3 different positions as to whether grade-related differences exist in children's perceptions of competence seem to exist: a proposition that scores are stable across grades 3 to 9 (Connell & Tero, 1982; Harter, 1982), a second position that decreasing developmental patterns exist (Berndt, 1987; Berndt & Hawkins, 1987; Nottelman, 1982; 1987) and/or a third position that there is selective development, involving an increasing pattern for cognitive and social (school-related) competence perceptions, and stability of scores for physical and general competence (non-academic activities) perceptions, as reported in the present study. While these apparent conflicting results may need to be examined further in succeeding replication studies, it is necessary to offer an explanation for the results of the present study as to why selective development in children's competence perceptions may be the most plausible of the three propositions referred to above.

Why is increasing grade-related pattern likely for cognitive and social competence perceptions and less likely for physical and general competence perceptions? First, children's competence judgments appear to be based on comparisons made among children and the reinforcing behaviours of significant others (Dweck, 1986; Fincham & Cain, 1986). These overt and covert behaviours of teachers, peers, and parents, though inadvertent, may nevertheless influence children's self-perceptions. They may be construed to mean that the older are more competent than the younger. Usually, older children are given supervisory roles and more responsibility and privileges in inter-grade activities, which may influence the way older children judge their competence compared to younger children. It appears that these conditions are more likely in school-related contexts than in general and physical activities. In physical and general activities, comparisons if made, are often made within the same peer group or at the same grade level. Children compete in physical activities at their peer levels. On the other hand, in school-related activities, there appears to be the tendency to compare older and younger children as well as children of different abilities. It is reasonable to suppose that if grade only effect is being examined, differences in children's perceptions, are less likely in physical and general competence which are less school-related than in cognitive and social competence perceptions. Research is needed to further sort out this problem.

Grade-related differences in Locus of Control

With respect to locus of control, grade 7 students manifested more total internal locus, and internal failure than grade 4, but the grade 7 and 4 students did not differ on internal success. IAR is a measure of locus of control specific to intellectual-academic achievement situations (Phares, 1976). It is likely that it is at higher grades more than at lower grades, that students will experience more responsibility concerning their own learning, and higher competence expectations or standards would be set and imposed for them by authority-figures. Subject specialization as well as preparation toward external examinations at higher grades usually require that students increase their effort to study and understand the concepts in their areas of subject specialty. Individual accountability for performance and examination results are imposed at higher grades even where group methods are used as the mode of instruction. This age difference in treatment may be reinforced especially in a middle-class home where higher parental expectations and more responsibility are perhaps given older sibling than the younger. These social reinforcements and expectations in the form of social cues will be observed and internalized by students (Luria, 1961; Vygotsky, 1962; 1978) and used to interpret their perceptions and performances.

The studies reviewed in the literature by and large reported this grade related increase in internal locus of control (e.g., Connell, 1980; Connell & Tero, 1982; Gottfried, 1981; Harter, 1980; 1981; Prawat, Grissom, & Parish, 1979). These studies just referred to in support of the developmental hypothesis with respect to internal locus of control, used a mixture of general and specific school-related locus of control instruments at grade 3 to 9 level and all confirmed this grade-related increases in internal locus of control. But the specific aspects of locus of control which are affected developmentally with respect to the LD, average achieving and the gifted were not clearly expressed in the research literature.

Based on the studies referred to above, it can be said that extant research supports the present study that internal locus of control increases significantly from grade 4 to 7. As well, the present study makes clear that it is total internal locus and internal failure subscales that differentiate grade 7 students from grade 4. Children did not differ at both grade 4 and 7 with respect to their acceptance of responsibility for success experiences (internal success), when achievement and ability differences were not stressed. More research in this direction may be conducted in future to clarify this. Whatever the case may be it is important to retrain students to get a realistic view of their failures and successes and be more accepting of them.

Grade-related differences in self-esteem

Self-esteem which measured the evaluative attitudes toward the self in social, home, school, general and total domains, is believed to be associated with personal satisfaction and effective functioning in many situations. It appears that in academic situations, differences in self-esteem will be a reflection of differences in satisfaction resulting from achievement and cognitive abilities. But the examination of grade-related differences among children examined in this section of our discussion was designed to minimize cognitive abilities and achievement differences, it is thus unlikely that differences in self-esteem if found in the present study between grade 4 and 7 would be attributable to these abilities and achievements differences.

Indeed, the results of the present study indicate that no differences in school and social self-esteem were evident. However, in home, general and total self-esteem, differences were manifested, with grade 7 students perceiving themselves as possessing higher self-esteem than grade 4. It is likely that differences in child-rearing practices associated with parental expectation, authority structures and control (see Bain, 1983; Goldstein & Blackman, 1978; Yu, 1981) may be implicated in the explanation of the differences.

Some studies using general self-esteem instruments (e.g., Piers-Harris Self-esteem) have reported age-related changes in self-esteem among grades 3 to 9 students (e.g., Larson, 1982; 1983; Thornburg & Glider, 1984). Some of these studies that were reviewed manifested either a decline in esteem scores (e.g., Blyth, Simmons, & Calton-Ford, 1983; Simmons, Rosenberg & Rosenberg, 1973; Thornburg & Jones, 1982) or stability of the scores across different grades (e.g., Prawat, Grissom & Parish, 1979). Most of the studies referred to above on self-esteem used general measures of self-esteem like the Coopersmith's (1981) instrument used in the present study.

The studies that found a decreasing developmental pattern for general self-esteem were designed specifically to examine transition effects and thus may not be strictly comparable to the design of the present study. The school transition effect studies reviewed by Eccles and Midgley (1989) suggest that transition effects would be most evident for the LD students than the average and gifted students, because the former would already be experiencing academic and adjustment problems before transition. More replication studies into general and specific aspects of self-esteem with respect to grade-related differences are needed in future to clarify some of these differences in results.

Grade-related differences in awareness of reading strategies

Grade-related changes were examined among grade 4 and 7 students with respect to reading strategies awareness, measured by Paris and Jacobs (1984) Index of Reading Awareness. This scale presumably tapped children's awareness of the evaluation, planning, and self-regulation as well as conditional strategies involved in reading. It has been theorized (e.g., Luria, 1961; Schubert, 1983; Vygotsky, 1962) and empirically supported (e.g., Paris & Lindaeur, 1982; Paris & Oka, 1986) that metacognitive aspects of reading increase in conjunction with developmental changes, significant differences exist between lower and higher grades with respect to reading awareness. The results from the present study support the theories and studies which found grade 7 students to be more aware of metacognitive reading awareness than grade 4.

The increasing trend in awareness of reading strategies as a function of grade can be explained in terms of a differentiation hypothesis (Werner, 1948; Witkins, 1962; Vygotsky, 1962; see also Darko-Yeboah, 1985). As children mature, many psychological functions undergo differentiation and integration and become functionally more efficient. For example, perception and/or awareness develop from a relatively global and diffused level to more specific and coordinated functions. It is likely that this differentiation and integration resulting in increasing efficiency will be manifested in reading variables and other content areas as well.

D. Grade by diagnostic group interaction

A third type of difference among learners examined concerned the interaction between grade and diagnostic group. That is, when grade and diagnostic group effects are combined, are there significant differences in the patterns of development comparing the learning disabled, average achieving and the gifted? With respect to all measures examined, though grade-related differences were more pervasive, grade by diagnostic group interaction was observed only in social self-esteem (see Figure 3). The developmental difference in social self-esteem results from an increasing pattern for the gifted and a decreasing pattern for both the average achieving and the learning disabled.

These developmental differences in social self-esteem among children of different ability and achievement levels may be attributed to the cumulative effect of successes for the gifted and failure experiences for the learning disabled and average achieving. These differences will be particularly reinforced by reactions from significant others to children's successes and failures because the reactions appear to influence children's perceptions of their competence, self-esteem, and subsequent acceptance of responsibility for success and failure experiences. The high performances of the gifted tend to be positively reinforced, whereas the low performances are non-reinforced especially in middle class contexts. As these successes and failure reactions, communicated to learners accumulate, they shape the perceptions and self-esteem of the gifted in an upward direction and the esteem of the learning disabled downward over time. Why the self-esteem of the average students might also fall may be related to the comparisons they make between themselves and the gifted. That is, as the gap between the average and the gifted widen at higher grades, the average may feel relatively inferior compared to the gifted which would consequently affect their self-esteem. The implication is that, as children move from grade 4 to 7, the gifted would manifest higher social self-esteem while the learning disabled and average achieving reveal lower self-esteem.

It is however, not clear why the other subscales of children's perceptions examined in the study and children's awareness of reading strategies did not manifest an interaction between grade and diagnostic groups. A possible explanation is the importance attached to social factors and the social cues from significant others that influence and override the pattern of affective and metacognitive development of learners of different abilities and achievement as children move from lower to higher grades.

E. Implication for instruction and research

The data obtained in the present study has implications for the identification of diagnostic groups, and provide rationale for attributional retraining of students manifesting negative affect, especially the learning disabled (Borkowski & Cavanaugh, 1979; Ellis, Lenz, & Sabornie, 1987). The dimensions on which students differed in the present study could be incorporated in future identification criteria of the learning disabled, average achieving and gifted groups. In terms of future studies, there is the need to develop local norms for the affective scales used in the study, since local norms were lacking, the tests having been normed on United States populations. Possibly the development of these local norms may be extended to special populations such as the learning disabled, and the gifted as well. Also it would be useful to develop a normative profile on all affective measures used in the present study for the identification of the learning disabled, average achieving, and achieving gifted.

The importance of affect variables and awareness of strategies in performance and as distinguishing characteristics for differing groups of students must receive more attention in research and classroom practices since they underlie proper instructional planning (Brophy, 1986; see Wittrock, 1986). The study here has revealed that cognitive competence perceptions and awareness of reading strategies (metacognition) are two areas of children's self-perceptions in which the learning disabled, average achieving, and gifted clearly differ but which are not actively incorporated into instructional planning especially at the elementary and junior high levels (Biggs, 1989; Chapman & Boersma, 1979; Kirby 1984; Mulcahy et. al., 1989). These areas of development are particularly important in the training of the learning disabled who have manifested considerable deficiency in these areas. Attributional retraining, using strategies and metacognitive awareness to help minimize negative affect and replace it with positive affect (Meichenbaum, 1977, 1983; Borkowski, 1985) have proven successful and thus may be a welcome intervention activity for the learning disabled in future.

Since the average achieving and gifted, and the learning disabled and the gifted were clearly delineated with respect to cognitive perception, internal success, and awareness of reading strategies, these subscales may be further examined if they could be adopted as some of the criteria for the identification of different groups of learners.

The learning disabled were characterized particularly by their inability to accept responsibility for their successes (i.e., positive internality), and their low awareness of reading strategies as well as low perception of their cognitive competence. These subscales therefore may be potential components of learning disability with respect to reading . Further studies are needed to verify these.

In intervention with the learning disabled, children can receive instruction in the skills of taking more responsibility for their successes as the present study identified this area of affect to be a problem area for the learning disabled. The educator can manipulate cognitive competence perceptions using metacognitive skill training techniques especially, cognitive modelling, to help in efforts to modify negative self-perceptions (e.g., Meichenbaum, 1977; 1986; Mulcahy, et al., 1989; see also Chance, 1986; Presseisen, 1985, 1987; Nickerson, Perkins, & Smith, 1985; Mulcahy, Peat & Darko-Yeboah, 1989).

Future research

In order to eliminate some of the conflicting research results in the developmental and individual differences research in affect, clearly delineated comparison groups appear to be useful. Also, affective instruments that are more specific to curricular content are needed (Chapman, 1988). It appears that the affective instruments specific to curricula content may be better able to delineate the learning disabled, average achieving and gifted students than global measures such as Coopersmith Self-Esteem Inventory, and Harter's Perceived Competence Scale for Children (Boersma, Chapman, & Maguire, 1978).

Owing to time and resource constraints, the study was conducted within a cross-sectional setting, though a longitudinal design may perhaps be a better approach in verifying the consistency of the results over time.

In future studies, more specific tests of affect may be selected or developed to examine children's self-perceptions. That is, for example, perception of competence with respect to reading and mathematics may be used instead of general perception, which is less content-related (see Chapman & Boersma, 1979).

It may also be necessary to provide local norms for some of the self-perception instruments used in the present study (i.e., IAR, IRA, and Harter's Perceived Competence Scale, and Coopersmith's Self-Esteem Inventory). That is, local norms for the normal population as well as norms for special populations may provide a more accurate picture of students' self-perceptions as they relate to achievement. Also, it may be instructive to conduct studies to factor out the Perceived Competence Scale (Harter, 1982), Coopersmith's (1981) Self-Esteem Inventory, and the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky, and Crandall, 1965) utilizing specific subgroups such as the Educable Mentally Retarded (EMR), to find out if the same basic factor structures emerge (see Harter, 1982 on discussion of the results for the EMR).

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APPENDIX A

Table 1

Means and standard deviations reported by Harter (1982)

Subscales Perceived Competence		Grade 4 X	Grade 4 SD	Grade 7 X	Grade 7 SD
Cognitive	*	2.9	.61	2.6	.63
	**	3.0	.59	2.8	.58
Social	*	2.7	.66	2.7	.61
	**	3.0	.72	3.0	.68
Physical	*	2.8	.63	2.6	.66
	**	3.1	.61	2.8	.68
General	*	2.9	.60	2.6	.56
	**	3.2	.47	2.9	.59

*California Sample n=746 ** Colorado Sample n=296; Adapted from Harter, 1982

Table 2

Sample sizes for measures in the study collapsed over diagnostic group

Test and Subtests	Sample Sizes Gr 4	Sample Sizes Gr 7
Canadian Cognitive Abilities Test (CCAT)	352	207
Canadian Achievement Test (CAT: Levels B & E)	375	300
Metacognitive Reading Awareness	261	136
Perceived Competence Scale for Children	296	247
The Scales for Rating the Behavioral Characteristics of Superior Students (SRBCSS)	363	193
Coopersmith Self-Esteem Inventory	323	271
Intellectual Achievement Responsibility Questionnaire (IAR)	359	322

Table 3

Sample sizes for Self-Perception measures presented for the LD, the Average Achieving and Gifted

Variable	Gr	LD	Average	Gifted	Total
Perceived	4	78	112	106	296
Competence	7	91	77	79	247
	Total	169	189	185	543
Locus of	4	97	136	124	359
Control	7	127	101	94	322
	Total	224	237	218	681
Self-Esteem	4	90	120	113	323
Inventory	7	111	81	79	271
	Total	201	201	192	594
Index of reading	4	69	99	93	261
Awareness	7	48	45	43	136
	Total	117	144	136	397

Table 4

Criteria for identification of diagnostic Groups, i.e., the LD, average achieving and the gifted

GIFTED:

-1 standard deviation from the mean on Verbal, Quantitative, Nonverbal subscales of Canadian Cognitive Abilities Test (CCAT)

-1 Grade above the mean on Reading, and Math areas of Canadian Achievement Test.

-Above average on all 3 subscales of Renzulli (1976) i.e., Learning, Motivation and Creativity

AVERAGE:

-Within 1 SD on the Verbal and Nonverbal subscales of CCAT

-1/2 Grade below and 1/2 GRADE above grade level on CAT - Reading

LEARNING DISABLED

-Within 1 SD of the mean on the Verbal and Nonverbal subscales of CCAT;

-One or more years below grade level on CAT Reading.

APPENDIX B

Table 5

Means and standard deviations for the subscales of perceived competence, locus of control, self-esteem, and awareness of reading strategies by grades and by diagnostic categories

		Grade		Diagnostic Groups		
Variable		4	7	LD	Average	Gifted
Perceived Competence:						
Cognitive	M	2.73	2.98	2.62	2.77	3.27
	SD	.59	.54	.63	.57	.48
Social	M	2.79	2.91	2.83	2.83	2.91
	SD	.67	.65	.69	.62	.66
Physical	M	2.80	2.85	2.88	2.81	2.77
	SD	.67	.65	.69	.62	.66
General	M	2.88	2.93	2.83	2.84	3.05
	SD	.59	.63	.76	.64	.57
Self Esteem						
Social	M	5.30	5.11	4.67	4.99	5.96
	SD	1.78	1.79	1.88	1.76	1.71
Home	M	5.29	6.15	5.46	5.59	6.11
	SD	1.86	1.65	1.74	1.80	1.73
School	M	5.33	5.61	5.35	5.13	5.94
	SD	1.87	2.06	1.88	2.16	1.84
General	M	17.23	18.75	16.96	17.30	19.70
	SD	4.33	4.39	4.58	4.38	4.11
Total	M	66.14	71.29	64.80	66.12	75.21
	SD	16.46	15.75	16.31	16.26	15.74
Locus of Control						
Total Internal	M	24.33	25.25	23.85	25.40	25.12
	SD	4.30	4.49	4.32	4.27	4.60
Internal Failure	M	10.95	11.56	10.92	11.57	11.27
	SD	2.97	2.87	2.87	2.68	3.19
Internal Success	M	13.37	13.69	12.92	13.83	13.84
	SD	2.23	2.55	2.45	2.37	2.36
Metacognitive Reading Awareness						
	M	29.96	32.80	29.97	31.30	32.88
	SD	4.03	4.48	4.79	4.36	3.53

Table 6

Means and standard deviations for the subscales of perceived competence, locus of control, self-esteem, and awareness of reading strategies - grade by diagnostic categories

		Diagnostic Groups					
		LD		AVERAGE		GIFTED	
		Gr 4	Gr 7	Gr 4	Gr 7	Gr 4	Gr 7
Perceived Competence							
Cognitive	M	2.50	2.74	2.71	2.82	3.16	3.38
	SD	.66	.59	.56	.58	.53	.43
Social	M	2.75	2.91	2.79	2.86	2.84	2.98
	SD	.58	.71	.67	.64	.64	.56
Physical	M	2.91	2.86	2.69	2.93	2.78	2.76
	SD	.66	.72	.67	.58	.71	.59
general	M	2.78	2.87	2.87	2.81	3.00	3.10
	SD	.59	.64	.62	.67	.57	.58
Self-Esteem							
Social	M	4.96	4.39	5.24	4.74	5.71	6.22
	SD	1.79	1.96	1.75	1.77	1.74	1.61
Home	M	5.16	5.77	5.09	6.09	5.63	6.60
	SD	1.79	1.69	1.89	1.70	1.89	1.56
School	M	5.19	5.51	5.21	5.05	5.59	6.28
	SD	1.66	2.07	2.01	2.31	1.91	1.77
General	M	16.62	17.30	16.64	18.15	18.60	20.80
	SD	4.11	5.01	4.46	4.29	4.40	4.56
Total	M	63.69	65.91	64.15	68.10	70.57	79.85
	SD	15.11	17.44	16.67	15.85	17.52	13.74
Locus of Control							
Total	M	23.27	24.43	24.74	26.06	24.98	25.26
	SD	4.24	4.94	4.30	5.10	4.37	4.81
Failure	M	10.56	11.29	11.16	11.97	11.15	11.40
	SD	2.93	2.81	2.88	2.46	3.09	3.29
Success	M	12.71	13.13	13.58	14.09	13.83	13.85
	SD	2.89	2.60	2.21	2.52	2.19	2.52
Metacognitive Reading Awareness							
	M	28.35	31.58	29.75	32.84	31.77	33.98
	SD	4.35	5.19	4.26	4.46	3.42	3.65

Table 6 continued

		Diagnostic Groups					
		LD		AVE		GFT	
		Gr 4	Gr 7	Gr 4	Gr 7	Gr 4	Gr 7
Cognitive Abilities							
Verbal	M	94.70	94.39	106.33	100.84	123.60	118.76
	SD	10.74	6.05	11.46	7.13	9.11	8.20
Quantitative	M	100.69	96.15	102.02	95.04	118.55	117.10
	SD	11.75	9.93	10.97	9.43	9.98	11.52
Nonverbal	M	103.51	98.79	102.07	100.54	122.50	119.43
	SD	11.45	9.90	12.28	8.93	10.92	10.05
Achievement							
Vocabulary	M	445.76	475.00	508.31	555.93	580.37	625.13
	SD	25.82	25,68	23.77	11.05	35.19	26.27
Comprehension	M	417.93	463.93	482.59	533.57	558.92	615.60
	SD	29.86	19.60	22.39	15.39	42.22	40.69
Computation	M	1405.47	483.85	432.44	511.63	482.54	583.14
	SD	32.39	49.12	33.97	36.79	33.28	44.84
Problem Solving	M	461.60	406.23	480.88	437.05	548.94	6.22
	SD	53.18	45.21	30.64	31,60	68.34	41.13

APPENDIX C

Table 7

Summary of ANOVA Results: Perception of Competence Scale (Cognitive)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	20.438	64.397	0.001
Grade	1	4.828	15.213	0.001
Diag. Group x Grade	2	0.193	0.609	0.544
Error	537	0.317		
Total	542	0.399		

Table 8

Scheffe Multiple Comparisons of the learning disabled, average achievers, and gifted in Perception of Competence (Cognitive)

I	J	Contrast	F Ratio	Prob.
1	2	-0.1462	2.944	0.058
1	3	-0.6477	57.596	0.001
2	3	-0.5016	36.022	0.001

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 9

Summary of ANOVA Results: Perception of Competence Scale (Social)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	0.393	0.963	0.382
Grade	1	1.949	4.780	0.029
Diag. Group x Grade	2	0.119	0.292	0.747
Error	537	0.408		
Total	542	0.409		

Table 10

Summary of ANOVA Results: Perception of Competence Scale (Physical)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	0.563	1.285	0.275
Grade	1	0.375	0.856	0.355
Diag. Group x Grade	2	1.123	2.565	0.079
Error	537	0.438		
Total	542	0.441		

Table 11

Summary of ANOVA Results: Perception of Competence Scale (General)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	2.848	7.651	0.001
Grade	1	0.230	0.619	0.432
Diag. Group x Grade	2	0.418	1.123	0.326
Error	537	0.372		
Total	542	0.381		

Table 12

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Perception of Competence (General)

I	J	Contrast	F Ratio	Prob.
1	2	-0.0136	0.022	0.978
1	3	-0.2252	5.936	0.003
2	3	-0.2116	5.465	0.004

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

APPENDIX D

Table 13

Summary of ANOVA Results: Self-Esteem (Social)

Source of Variation	D.F	Mean Square	F- Ratio	Prob.
Diagnostic Group	2	85.898	26.775	0.001
Grade	1	5.066	1.579	0.209
Diag. Group x Grade	2	17.182	5.356	0.005
Error	588	3.208		
Total	593	3.537		

Table 14

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Self-Esteem (Social)

I	J	Contrast	F Ratio	Prob.
1	2	-0.3197	1.562	0.211
1	3	-1.2901	24.925	0.001
2	3	-0.9794	13.915	0.001

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 15

Summary of ANOVA Results: Self-Esteem (Home)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	22.582	7.187	0.001
Grade	1	106.133	33.778	0.001
Diag. Group x Grade	2	2.248	0.715	0.489
Error	588	3.142		
Total	593	3.378		

Table 16

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Self-Esteem (Home)

I	J	Contrast	F Ratio	Prob.
1	2	-0.1284	0.258	0.773
1	3	-0.6510	6.480	0.002
2	3	-0.5226	4.120	0.017

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 17

Summary of ANOVA Results: Self-Esteem (School)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	32.914	8.495	0.001
Grade	1	11.379	2.937	0.087
Diag. Group x Grade	2	8.508	2.196	0.112
Error	588	3.875		
Total	593	4.001		

Table 18

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Self-Esteem (School)

I	J	Contrast	F Ratio	Prob.
1	2	0.21784	0.600	0.549
1	3	-0.5890	4.302	0.014
2	3	-0.8068	7.965	0.001

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 19

Summary of ANOVA Results: Self-Esteem (General)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	422.500	21.791	0.001
Grade	1	333.750	17.214	0.001
Diag. Group x Grade	2	29.000	1.496	0.225
Error	588	19.388		
Total	593	21.310		

Table 20

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Self-Esteem (General)

I	J	Contrast	F Ratio	Prob.
1	2	-0.3435	0.298	0.742
1	3	-2.7399	18.602	0.001
2	3	-2.3964	14.042	0.001

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 21

Summary of ANOVA Results: Self-Esteem (Total)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	6086.500	22.941	0.001
Grade	1	3830.000	14.436	0.001
Diag. Group x Grade	2	643.500	2.426	0.089
Error	588	265.306		
Total	593	292.226		

Table 22

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Self-Esteem (Total)

I	J	Contrast	F Ratio	Prob.
1	2	-1.3250	0.324	0.723
1	3	-10.408	19.616	0.001
2	3	-9.0828	14.742	0.001

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

APPENDIX E

Table 23

Summary of ANOVA Results: Internal Locus of Control (Total)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	152.594	7.925	0.001
Grade	1	140.563	7.300	0.007
Diag. Group x Grade	2	17.063	0.886	0.413
Error	673	19.255		
Total	678	19.821		

Table 24

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Internal Locus of Control (Total)

I	J	Contrast	F Ratio	Prob.
1	2	-0.0155	7.082	0.001
1	3	-1.2690	4.534	0.011
2	3	0.28540	0.235	0.790

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 25

Summary of ANOVA Results: Internal Locus of Control (Failure)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	23.313	2.742	0.065
Grade	1	60.000	7.057	0.008
Diag. Group x Grade	2	4.844	0.570	0.566
Error	673	8.502		
Total	678	8.611		

Table 26

Summary of ANOVA Results: Internal Locus of Control (Success)

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	61.719	10.835	0.001
Grade	1	16.875	2.963	0.086
Diag. Group x Grade	2	3.656	0.642	0.527
Error	673	5.696		
Total	678	5.872		

Table 27

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Internal Locus of Control (Success)

I	J	Contrast	F Ratio	Prob.
1	2	-0.9124	8.248	0.001
1	3	-0.9183	8.026	0.001
2	3	-0.0059	0.001	1.000

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

APPENDIX F

Table 28

Summary of ANOVA Results: Metacognitive Reading Awareness

Source of Variation	D.F	Mean Square	F Ratio	Prob.
Diagnostic Group	2	245.219	14.019	0.001
Grade	1	716.688	40.973	0.001
Diag. Group x Grade	2	9.188	0.525	0.592
Error	391	17.492		
Total	396	20.366		

Table 29

Scheffe Multiple Comparisons among the learning disabled, average achievers, and gifted in Metacognitive Reading Awareness

I	J	Contrast	F Ratio	Prob.
1	2	-1.3304	2.991	0.051
1	3	-2.9099	13.963	0.001
2	3	-1.5795	4.300	0.014

Where 1=Learning Disabled, 2=Average Achiever, 3=Gifted

Table 30

A description of the IRA items and its division into evaluation, planning, regulation and conditional knowledge items according to Jacobs and Paris (1987)

Evaluation

One relevant aspect of strategic reading is an individual's perception that the material he/she is reading should be evaluated for meaning. The items of the IRA which were hypothesized to tap awareness of evaluation were items 1, 2, 4, 5, and 9.

Item 1: *What is the hardest part about reading for you?*

1 (a) Sounding out the words
2 (b) When you don't understand the story
0 (c) Nothing is hard about reading for me.

Item 2: *What would help you become a better reader?*

1 (a) If more people would help you when you read
0 (b) Reading easier book with shorter words
2 (c) Checking to make sure you understand what you read

Item 4: *What is special about the first sentence or two in a story?*

1 (a) They always begin with "Once upon a time..."
0 (b) The first sentences are the most interesting.
2 (c) They often tell what the story is about.

Table 30 continued

Item 5: *How are the last sentences of a story special?*

1 (a) They are the exciting, action sentences

2 (b) They tell you what happened

0 (c) They are harder to read.

Item 9: *How can you tell which sentences are the most important ones in a story?*

2 (a) They are the ones that tell the most about the characters and what happens

1 (b) They are the most interesting ones

0 (c) All of them are important

Planning

The items hypothesized to measure planning included 8, 11, 12, 14 and 16. They concern students' awareness of the mental picture or the steps and processes involved in reading.

Item 8: *If you could only read some sentences in the story because you were in a hurry, which ones would you read?*

0 (a) Read the sentences in the middle of the story

2 (b) Read the sentences that tell you the most about the story

1 (c) Read the interesting exciting sentences

Table 30 continued

Item 11: *When you tell other people about what you read, what do you tell them?*

2 (a) What happened in the story
0 (b) The number of pages in the book
1 (c) Who the characters were.

Item 12: *If the teacher told you to read a story to remember the general meaning, what would you do?*

2 (a) Skim through the story to find the main parts
1 (b) Read all the story and try to remember the meaning
0 (c) Read the story and remember all the words.

Item 14: *Before you start to read, what kind of plans do you make to help you to read better?*

0 (a) You don't make any plans. You just start reading
1 (b) You choose a comfortable place
2 (c) You think about why you are reading.

Item 16: *If you had to read very fast and could only read some words, which ones would you try to read?*

1 (a) Read the new vocabulary words because they are important
0 (b) Read the words that you could pronounce
2 (c) Read the words that tell the most about the story.

Table 30 continued

Regulation

Regulation concerns the awareness of what to do or what is expected on a reading task, and were hypothesized to be assessed by items 7, 15, 18, 20, and 21 of the IRA.

Item 7: *What things do you read faster than others?*

1 (a) Books that are easy to read

2 (b) When you've read the story before

0 (c) Books that have lots of pictures

Item 15: *Why do you go back and read things over again?*

1 (a) Because it's good practice.

2 (b) Because you didn't understand it.

0 (c) Because you forgot some words.

Item 18: *What do you do if you come to a word and you don't know what it means?*

2 (a) Use the words around it to figure it out

1 (b) Ask someone else

0 (c) Go on to the next word.

Item 20: *What do you do if you don't know what a whole sentence means?*

1 (a) Read it again

0 (b) Sound out all of the words

2 (c) Think about the other sentences in the paragraph.

Table 30 continued

Item 21: What parts of the story do you skip as you read?

1 (a) The hard words and parts you don't understand

2 (b) The unimportant parts that don't mean anything for the story

0 (c) You never skip anything.

Conditional Knowledge

The items (3, 6, 10, 13, 17, 19, and 22) were hypothesized to assess conditional knowledge, i.e., children's awareness of when and why particular strategies were to be used during reading.

Item 3: *If you are rereading a story for fun, what would you do?*

1 (a) Look at the pictures to get the meaning

0 (b) Read the story as fast as you can

2 (c) Imagine the story like a movie in you mind.

Item 6: *If you are reading for science or social studies, what would you do?*

2 (a) Ask yourself questions about the important ideas

0 (b) Skip the parts you don't understand

1 (c) Concentrate and try hard to remember it.

Table 30 continued

Item 10: *If you are reading for a test, which would help you the most?*

1 (a) Read the story as many times as possible

2 (b) Talk about it with somebody to make sure you understand it.

0 (c) Say the sentences over and over.

Item 13: *If you are reading a library book to write a book report, which would help you the most?*

1 (a) Sound out words you don't know

2 (b) Write it down in your own words

0 (c) Skip the parts you don't understand.

Item 17: *Which would help you read better?*

2 (a) Check to see if you understand the meaning

0 (b) Copy the whole story

1 (c) Write down the words you don't understand.

Item 19: Which of these would help you understand a story?

2 (a) *Think about what the sentences mean and how they go together*

1 (b) Look up all of the words in the dictionary

0 (c) Read the story aloud

Item 22: *Which of these is the best way to remember a story?*

0 (a) Say every word over and over

1 (b) Think about remembering it

2 (c) Write it down in you own words.

APPENDIX G

Table 31

The Relationship among Perceived Competence, Locus of Control, and Self-Esteem for Grades 4 and 7 Learning Disabled

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	-	.30*	.38**	.37**	.43***	-.02	.21	.12	.24	.07	-.03	.07	.29*
2	.51***	-	-.13	-.13	-.18	-.03	-.16	.12	-.21	.46***	-.45***	.65***	.03
3	.15	.43**	-	.76***	.86***	.32*	.46**	.40**	.40**	-.11	.05	-.11	.40**
4	.56***	.71***	.51***	-	.97***	.48**	.57**	.35*	.62***	.02	.05	-.02	.47**
5	.67***	.78***	.67***	.96***	-	.42**	.58**	.39*	.60***	-.04	.12	-.11	.46**
6	.44**	.41**	.49***	.55***	.61***	-	.58**	.21	.43**	-.27	-.38*	.04	.10
7	.15	.61***	.15	.43**	.43**	.46**	-	.24	.48**	-.33*	.06	-.29*	.23
8	-.07	.17	-.12	.16	.11	.37*	.38*	-	.09	-.21	.21	-.01	.19
9	.43**	.44**	.35**	.59***	.58***	.57***	.45**	.17	-	-.30*	-.20	-.10	.20
10	-.01	.09	-.07	.02	.01	-.17	.22	-.18	-.02	-	.02	.43**	.30*
11	-.11	-.04	-.04	-.30*	-.22	-.07	.24	-.07	-.13	-.04	-	-.67	.06
12	.08	-.06	-.11	.19	.08	-.16	-.05	-.14	.09	.60	-.64	-	.28
13	.13	.32*	.10	.44**	.39**	.49***	.48**	.59	.55	.22	-.11	.07	-

* <.05; ** <.01; *** <.001

Figures above the diagonal are for Grade 4 and those below the diagonal are for grade 7
1 = Self-Esteem - Social; 2 = Self-Esteem - Home; 3= Self-Esteem - School;4= Self-Esteem - General;
5= Self-Esteem - Total; 6 = Perceived Competence - Cognitive; 7 = Perceived Competence - Social;
8 = Perceived Competence - General; 9 = Perceived Competence - Total; 10 = Locus of Control - Total Internal;
11 = Locus of Control - Internal Failure; 12 = Locus of Control - Internal Success; 13 = Index of Reading Awareness

Table 32

The relationship among Perceived Competence, Locus of Control, and Self-Esteem for Grades 4 and 7 Average Achieving

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	-	.61***	.39**	.55**	.72***	.44**	.50**	.27	.49***	-.15	-.07	-.10	.61**
2	.22	-	.43**	.61***	.77***	.30*	.68***	.51**	.36*	.36*	-.06	.42**	.51**
3	.36**	-.07	-	.62***	.75***	.10	.34**	.14	.56***	.36*	-.06	.42**	.22
4	.45**	.08	.61***	-	.94***	.29*	.48**	.34*	.71***	.33*	.05	.31*	.22
5	.66***	.26	.77***	.91***	-	.34**	.61***	.39**	.77***	-.28	.12	-.38**	.52**
6	.34*	-.09	-.16	.06	.04	-	.36**	.19	.52**	.11	-.18	.26	.57**
7	.10	.60***	-.11	-.09	.04	-.04	-	.68***	.70***	.21	-.12	-.31*	.38**
8	-.09	-.22	.05	-.17	-.14	.01	.02	-	.64***	.12	-.23	.28*	.17
9	.47***	.46**	.14	.17	.32*	.18	.27	.36*	-	.37**	.04	.31*	.38**
10	.20	.17	-.04	-.07	.02	.62***	.22	.52**	.65***	-	.42**	.73***	.01
11	-.02	-.17	-.08	-.11	-.13	.12	-.43**	.08	.40**	.13	-	-.31*	.15
12	.23	.34**	.04	.03	.15	.35*	.56***	.31*	.10	.53**	-.78***	-	-.11
13	.50***	-.02	.10	.07	.19	.48***	.10	.01	.04	-.01	-.33*	.27*	-

* <.05; ** <.01; *** <.001

Figures above the diagonal are for Grade 4 and those below the diagonal are for grade 7

1 = Self-Esteem - Social; 2 = Self-Esteem - Home; 3= Self-Esteem - School;4= Self-Esteem - General;
5= Self-Esteem - Total; 6 = Perceived Competence - Cognitive; 7 = Perceived Competence - Social;
8 = Perceived Competence - General; 9 = Perceived Competence - Total; 10 = Locus of Control - Total Internal;
11 = Locus of Control - Internal Failure; 12 = Locus of Control - Internal Success; 13 = Index of Reading Awareness

Table 33

Intercorrelations among the subtests of Perceived Competence, Locus of Control, and Self-Esteem for Grades 4 and 7 Gifted

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	- -	.13	.33**	.54**	.65***	.26	.05	-.06	.20	.21	-.09	.22	.17
2	.57	- -	.22	.57**	.64***	.20	.72***	.35*	.64***	-.11	-.21	.04	.22
3	.24	.69***	- -	.41**	.65***	.03	.17	.19	.24	-.03	.32*	-.22	.19
4	.63***	.74***	.69***	- -	.93***	.34*	.54**	.35*	.66***	.21	-.02	.18	.32*
5	.68***	.85***	.84***	.96***	--	.32*	.54**	.33*	.66***	.15	.02	.11	.33*
6	.42**	.10	.05	.09	.16	--	.44**	.42**	.44**	.15	-.22	.29*	.40**
7	.63***	.73***	.43**	.69***	.73***	.25	--	.56***	.53***	.01	-.29*	.19	.25
8	.33*	.35*	.08	.43**	.36*	.19	.41**	--	.26	.03	-.05	.06	.24
9	.49**	.49**	.40**	.60***	.59**	.60***	.58***	.52***	--	.23	-.31*	.41**	.34*
10	.12	-.01	-.01	.15	.10	.18	.32*	.18	.53***	--	.17	.75**	-.09
11	-.13	.10	-.10	-.25	-.19	.11	.31*	-.21	.08	.18	--	-.53**	-.11
12	.19	-.10	.09	.33*	24	.01	-.08	.31*	.26	.44**	-.81***	--	-.01
13	-.04	.02	-.14	-.01	-.07	.28	.18	.45**	.45**	.19	.15	-.02	-

* <.05; ** <.01; *** <.001

Figures above the diagonal are for Grade 4 and those below the diagonal are for grade 7

1 = Self-Esteem - Social; 2 = Self-Esteem - Home; 3= Self-Esteem - School;4= Self-Esteem - General; 5= Self-Esteem - Total; 6 = Perceived Competence - Cognitive; 7 = Perceived Competence - Social; 8 = Perceived Competence - General; 9 = Perceived Competence - Total; 10 = Locus of Control - Total Internal; 11 = Locus of Control - Internal Failure; 12 = Locus of Control - Internal Success; 13 = Index of Reading Awareness

Table 34

The relationship between reading achievement and students' self-perception measures for Grades 4 and 7 LD, average and gifted.

Self- Perception Scales		Reading vocabulary Gr 4	Reading vocabulary Gr 7	Reading Comprehension Gr 4	Reading Comprehension Gr 7
Cognitive Perception of Competence	LD	.17	-.46**	.29*	-.26
	AVE	.32*	.23	.50***	.23
	GFT	.39**	.30*	.53***	.33*
Social Perception of Competence	LD	.11	-.12	.14	-.25
	AVE	.32*	-.40***	.24	.20
	GFT	.39**	.28*	.54***	.14
general Perception of Competence	LD	.14	-.38**	.32*	-.14
	AVE	.38**	.20	.36**	.13
	GFT	.33*	.56***	.39**	.40**
School Self-Esteem	LD	.29*	.32*	.41***	-.21
	AVE	.22	.26	.25	-.23
	GFT	.31*	.45***	.19	.29*
Social Self-Esteem	LD	.27*	-.46***	.39**	-.13
	AVE	.36**	.13	.37**	.13
	GFT	.38**	.14	.41***	.14
General Self-Esteem	LD	.39**	-.25	.51***	.25
	AVE	.30*	.10	.22	.29*
	GFT	.28*	.52***	.32*	.32*
Internal Failure (LOC)	LD	-.12	-.38**	.01	.12
	AVE	-.20	-.10	.05	.25
	GFT	.26	.19	.13	.32*
Internal Success (LOC)	LD	.11	.26	.21	.27*
	AVE	.16	.18	.07	.34*
	GFT	.10	.25	.08	.37**
Index of Reading Awareness	LD	.40**	-.27	.49***	.27*
	AVE	.44**	-.26	.45***	.21
	GFT	.48***	-.21	.48***	.23

* <.05; ** <.01; *** <.001

APPENDIX H

Table 35

Summary of the ANOVA results concerning grade and diagnostic group differences

Variable	F-Ratios		Pairs of Groups that Differ Significantly
	Grade Effect	Group Effect	
Perceived Competence			
Cognitive	15.21**	64.40***	1 & 2; 1 & 3; 2 & 3
Social	4.78*	NS	
Physical	NS	NS	
General	NS	7.65**	1 & 3; 2 & 3
Locus of Control			
Internal (Total)	7.30**	7.93**	1 & 2; 1 & 3; 2 & 3
Internal (Failure)	7.06**	NS	
Internal (Success)	2.96*	10.84**	1 & 2; 1 & 3
Self-Esteem			
Social	NS	26.78***	2 & 3; 1 & 3
Home	33.78***	7.19*	2 & 3; 1 & 3
School	NS	8.50*	2 & 3; 1 & 3
General	17.21**	21.79***	2 & 3; 1 & 3
Total	14.44**	22.94***	2 & 3; 1 & 3
Metacognitive Reading Awareness	40.97***	14.02**	1 & 2; 1 & 3; 2 & 3

* <.05; ** <.01; *** <.001

Where 1 = Learning Disabled, 2 = Average Achieving, 3 = Gifted. groups